Vol. 911 Number 2

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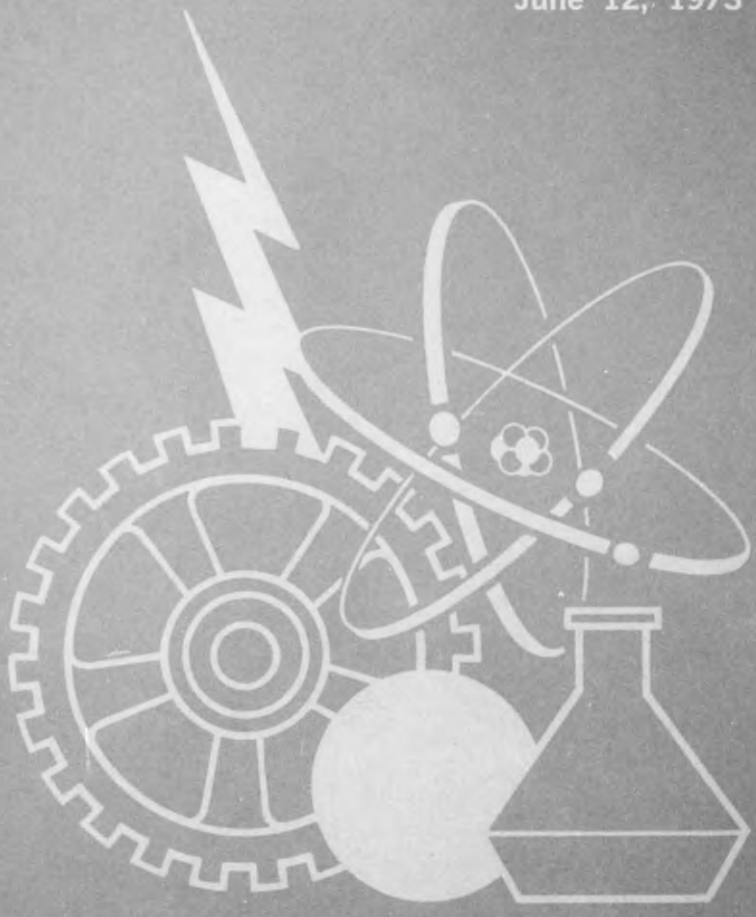
PATENTS

June 12, 1973



U. S. DEPARTMENT OF COMMERCE
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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

June 12, 197 3 Volume 911 Number 2

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PATENT OFFICE NOTICES

Removal from Register

Pursuant to the provisions of Rule 347 of the Rules of Practice of the United States Patent Office in Patent Cases, a letter was directed on Mar. 15, 1973, to Mr. Mel Sirkin, 1224 17th St. NW., Washington, D.C., 20036, the last post office address furnished by him to the Committee on Enrollment. No reply was received within the one month period therein set. Accordingly, his name is being removed from the Register of Attorneys and Agents.

LUTRELLE F. PARKER,
May 15, 1973. *Chairman, Committee on Enrollment.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,750,855, J. D. Huffines, REFUSE COMPRESSOR MECHANISM FOR VEHICLES, filed Oct. 31, 1972, D.C., E.D. Mo. (St. Louis), Doc. 72C682(A), *James Donie Huffines* v. *R-V Industries.* Same, filed Nov. 6, 1972, D.C., N.D. Ohio (Cleveland), Doc. C72-1206, *James Donie Huffines* v. *Peabody Galion, Inc., doing business as E-Z Pack.*

3,828,449, I. L. Kerper, SAFETY FEATURE FOR ELECTRIC WATERTIGHT DOOR SYSTEMS, filed Nov. 17, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72-2754-IH, *Irving L. Kerper* v. *Pacific Far East Line, Inc.*

3,098,947, R. A. Flieder, ELECTRICAL SYSTEMS INCLUDING CAPACITORS, filed Nov. 9, 1972, D.C., S.D.N.Y., Doc. 72-C-4766, *Berkey Photo, Inc.* v. *Norman Enterprises, Inc.*

3,102,585, H. Kramer, WEB-TO-TUBE FASTENINGS, filed Nov. 17, 1972, D.C., S.D.N.Y., Doc. 72-C-4911, *Hyman Kramer* v. *Ruson Shield Corporation.*

3,225,677, R. M. Steele, JUNCTION CHAMBER FOR EQUALIZING PRESSURE OF CONDITIONED-AIR SUPPLY INCORPORATING RETURNED-AIR DUCT, filed Nov. 21, 1972, D.C., N.D. Calif. (San Francisco), Doc. 72-2128, *Richard M. Steele* v. *Carrier Corporation.*

3,332,485, W. A. Colburn, METHOD FOR PRODUCING PETROLEUM, filed Dec. 1, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72-2870-R, *Petrocal* v. *City of Long Beach, Thums Long Beach, California.*

3,371,828, N. E. Elsas, TURNING APPARATUS, filed Dec. 1, 1972, D.C., S.D.N.Y., Doc. 72-C-5104, *Nemo Industries, Inc.* v. *Pulwel Machine Corporation.*

3,376,752, E. E. Malone, GRAVEL SAMPLING MACHINE, filed Nov. 16, 1970, D.C. Idaho (Boise), Doc. C-1-70-113, *Eugene E. Malone* v. *Twin Falls Construction Co. et al.* Order dismissing complaint on Nov. 21, 1972.

3,421,171, T. Tsuruzawa, BRUSH FOR CLEANING, filed May 24, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72-1160-IH, *K-Tel International, Inc.* v. *Sav-On-Drugs, Inc., and S. C. Chan, doing business as Sing Lee Plastic & Metal Manufacturing.* Filed judgment by defendant; order enjoining defendant from infringing plaintiff's U.S. Patent No. 3,421,171 and U.S. Trademark Registration No. 890,887. Court retains jurisdiction, Nov. 27, 1972.

3,426,580, F. J. Callahan, METHOD OF TESTING JOINTS IN PRESSURIZED FLUID LINE, filed Jan. 11, 1972, D.C. Minn. (Minneapolis), Doc. 4-72-C-20, *Nupro Co.* v. *Guy Speaker Company, Inc., doing business as Fluid Products Co., also known as Guy Speaker Process Accessories Co., and Guy Speaker.* Consent judgment against defendant and in favor of plaintiff, enjoining defendant from infringing said patent, filed Nov. 30, 1972.

3,473,681, S. Hall, Jr., SAFETY MEDICINE BOTTLE CLOSURE, filed Nov. 29, 1972, D.C., W.D. Okla. (Oklahoma City), Doc. 72-825-C, *Plastic Container Corporation* v. *Continental Plastics of Oklahoma, Inc.*

3,570,748, J. W. Coyle and L. J. Marsella, COMPOSITE FILM AND METHOD, filed Nov. 29, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c3003, *Standard Packaging Corp.* v. *Curwood, Inc.*

3,574,911, W. G. Penoyar, CUTTER AND INSERTS THEREFOR, filed Nov. 15, 1972, D.C., W.D. Mich. (Grand Rapids), Doc. G341-72-CA, *Milling Specialties, Inc.* v. *Kysor Industrial Corp.*

3,622,980, F. R. Elledge, Jr., DIRECTIONAL WARNING SYSTEM, filed Nov. 20, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72-2766-FW, *Cassil Company, Inc.* v. *Royal Industries, Inc.*

3,657,060, T. I. Haigh, EMBROIDERED EMBLEM WITH THERMOPLASTIC ADHESIVE, filed Nov. 14, 1972, D.C., E.D. Pa. (Philadelphia), Doc. C.A. 72-2249, *Lion Brothers Company, Inc.* v. *The Penn Novelty Company.*

3,600,797, J. Firestone, TELEPHONE CONNECTOR, filed Nov. 29, 1972, D.C., S.D.N.Y., Doc. 72-C-5070, *Tron-Tech, Inc.* v. *Saxton Products, Inc.* Case transfer from Central District of California, Nov. 29, 1972.

3,675,247, J. O. Ferrell, METHOD FOR FABRICATING PANTY HOSE, filed Oct. 17, 1972, D.C., M.D.N.C. (Greensboro), Doc. C-302-G-72, *Tights, Inc.* v. *Kayser Roth Corporation.*

D. 207,260, J. Jensen, FIRE EXTINGUISHER, filed May 22, 1972, D.C., N.D. Ohio (Cleveland), Doc. C-72-523, *Modulus Corporation* v. *Jack E. Mosow, doing business as JEM Associates.* Consent judgment; plaintiff owner of said patent; defendant enjoined, Dec. 5, 1972.

D. 217,942, N. P. Angelakos, ASH TRAY, filed Nov. 28, 1972, D.C., S.D.N.Y., Doc. 72-5038, *Lancaster Colony Corporation* v. *Aldon Accessories Limited and Royal London Limited.*

Certificates of Correction for the Week of June 12, 1973

3,293,571	3,684,143	3,702,847	3,710,495
3,328,309	3,684,821	3,703,371	3,710,809
3,412,113	3,684,903	3,703,374	3,711,184
3,437,729	3,684,993	3,703,522	3,711,205
3,467,555	3,685,564	3,703,541	3,711,250
3,522,225	6,685,963	3,703,653	3,711,434
3,559,451	3,686,412	3,704,124	3,711,436
3,577,041	3,687,223	3,704,649	3,711,440
3,577,354	3,687,828	3,704,733	3,711,562
3,580,756	3,688,558	3,705,170	3,711,563
3,598,831	3,689,448	3,705,815	3,711,793
3,622,862	3,690,066	3,705,917	3,711,805
3,623,138	3,690,707	3,706,161	3,712,026
3,632,013	3,691,212	3,706,578	3,712,235
3,634,559	3,692,118	3,706,674	3,712,475
3,637,578	3,692,798	3,706,741	3,712,693
3,640,267	3,693,017	3,706,796	3,712,727
3,645,857	3,693,030	3,707,103	3,712,840
3,647,441	3,693,875	3,707,169	3,713,315
3,652,373	3,694,151	3,707,378	3,713,359
3,658,577	3,694,562	3,707,678	3,713,563
3,660,529	3,696,255	3,707,803	3,713,630
3,666,628	3,697,458	3,707,877	3,713,631
3,670,127	3,697,597	3,707,992	3,713,753
3,670,175	3,698,068	3,708,210	3,714,000
3,670,213	3,698,829	3,708,298	3,714,180
3,671,160	3,699,165	3,708,329	3,714,307
3,671,282	3,699,355	3,708,490	3,714,365
3,672,728	3,699,405	3,708,793	3,714,418
3,672,817	3,700,049	3,708,872	3,714,472
3,678,515	3,700,144	3,708,926	3,714,512
3,678,899	3,700,751	3,709,073	3,714,556
3,680,411	3,700,801	3,709,162	3,714,783
3,681,151	3,700,814	3,709,367	3,714,859
3,682,712	3,701,855	3,709,472	3,714,793
3,683,080	3,701,935	3,709,651	3,715,651
3,683,166	3,701,941	3,709,716	
3,683,212	3,702,417	3,709,727	
3,683,612	3,702,555	3,710,276	

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the GSA Patent Licensing Regulations.

Copies of patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22151, at the prices cited. Requests for copies of patent applications must include the patent application number and the title. Requests for licensing information should be directed to the address cited with each copy of the patent application.

Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each. Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator, National Technical Information Service.

U.S. ATOMIC ENERGY COMMISSION
Assistant General Counsel for Patents, Washington, D.C. 20545

Patent 3,677,743. Mixing and Settling Separation Process for Uranium or Plutonium. Filed June 3, 1969. Patented July 18, 1972. Not available NTIS.

Patent 3,677,891. Antijam Sliding Seal Structure. Filed June 16, 1971. Patented July 18, 1972. Not available NTIS.

Patent 3,687,804. Compact and Safe Nuclear Reactor. Filed Oct. 27, 1971. Patented Aug. 29, 1972. Not available NTIS.

Patent 3,688,305. Pulse Height Analyzer With Digital Readout. Filed Nov. 18, 1970. Patented Aug. 29, 1972. Not available NTIS.

Patent 3,691,084. Base-Borate Reactor Safety Spray Solution for Radiolytic Hydrogen Suppression. Filed Apr. 19, 1971. Patented Sept. 12, 1972. Not available NTIS.

Patent 3,692,626. Apparatus for Forming and Containing Plasma. Filed Mar. 21, 1969. Patented Sept. 19, 1972. Not available NTIS.

Patent 3,694,274. High-Transition-Temperature Superconductors in the Nb-Al-Ge System. Filed Apr. 26, 1971. Patented Sept. 26, 1972. Not available NTIS.

Patent 3,694,369. Selective Ion Exchange for the Isolation of Certain Alkaline Earths. Filed May 11, 1971. Patented Sept. 26, 1972. Not available NTIS.

Patent 3,657,801. Methods of Joining Certain Metals. Filed Apr. 22, 1970. Patented Apr. 25, 1972. Not available NTIS.

Patent 3,649,827. Helical Three-Stage Isotope Separation. Filed Aug. 13, 1970. Patented Mar. 14, 1972. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters, NASA—Code GP–2, Washington, D.C. 20546

Patent application 333,912. Automatic Frequency Control for FM Transmitter. Filed Feb. 20, 1973. PC $3/MF $0.95.

Patent application 329,237. Integrated, Single Channel Type FET Gyrator. Filed Feb. 2, 1973. PC $3/MF $0.95.

Patent application 318,357. Method and Apparatus for Checking Fire Detectors. Filed Dec. 26, 1972. PC $3/MF $0.95.

Patent application 337,816. A Leak Detector. Filed Mar. 5, 1973. PC $3/MF $0.95.

Patent application 337,487. A Device for Configuring Multiple Leads. Filed Mar. 2, 1973. PC $3/MF $0.95.

Patent 3,708,674. Combustion Detector. Patented Jan. 2, 1973. Not available NTIS.

[FR Doc. 73–10101; Filed 5–22–73; 8:45 am]

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the GSA Patent Licensing Regulations.

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Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each. Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator, National Technical Information Service.

U.S. ATOMIC ENERGY COMMISSION
Assistant General Counsel for Patents, Washington, D.C. 20545

Patent 3,677,889. Magnetic Compression Controlled Thermonuclear Reactor. Filed July 8, 1970. Patented July 18, 1972. Not available NTIS.

Patent 3,667,719. Method for Reprocessing Molten Fluoride Salt Reactor Fuels. Filed Mar. 9, 1971. Patented July 18, 1972. Not available NTIS.

Patent 3,667,890. Plasma Heating and Densification in Axisymmetric Toroidal Plasma Confinement Devices. Filed Apr. 23, 1971. Patented July 18, 1972. Not available NTIS.

Patent 3,677,893. Fuel Assembly for a Liquid-Metal-Cooled Fast Breeder Reactor. Filed Oct. 29, 1971. Patented July 18, 1972. Not available NTIS.

Patent 3,677,958. Radioactive Heat Source. Filed Nov. 6, 1968. Patented July 18, 1972. Not available NTIS.

Patent 3,678,323. Hydrogen Ion Beam Generating Electrode. Filed Dec. 8, 1970. Patented July 18, 1972. Not available NTIS.

Patent 3,683,272. Method and Apparatus for Determining Hydrogen Concentration in Liquid Sodium Utilizing an Ion Pump To Ionize the Hydrogen. Filed Nov. 24, 1970. Patented Aug. 8, 1972. Not available NTIS.

Patent 3,687,641. Separation and Recovery of Americium From Curium and Other Elements. Filed Mar. 9, 1971. Patented Aug. 29, 1972. Not available NTIS.

Patent 3,689,428. Nuclear Fuel Having Minimum-Gas-Release Properties. Filed June 8, 1970. Patented Sept. 5, 1972. Not available NTIS.

Patent 3,692,472. Recovery of Sulfur Dioxide. Filed Apr. 28, 1971. Patented Sept. 19, 1972. Not available NTIS.

Patent 3,692,989. Computer Diagnostic With Inherent Fail-Safety. Filed Oct. 14, 1970. Patented Sept. 19, 1972. Not available NTIS.

Patent 3,694,370. Process for Palladium Recovery. Filed June 21, 1971. Patented Sept. 26, 1972. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters, NASA—Code GP–2, Washington, D.C. 20546

Patent application 319,150. A System for Generating Timing and Control Signals. Filed Dec. 26, 1972. PC $4/MF $0.95.

Patent application 334,349. An Automatic Liquid Inventory Collecting and Dispensing Unit. Filed Feb. 21, 1973. PC $3/MF $0.95.

[FR Doc. 73-10102; Filed 5-22-73; 8:45 am]

Disclaimers

3,486,547.—*Robert Pope Powers*, Akron, Ohio. PNEUMATIC TIRE. Patent dated Dec. 30, 1969. Disclaimer filed Mar. 2, 1973, by the assignee, *The Firestone Tire & Rubber Company*.

Hereby disclaims the portion of the term of the patent subsequent to July 16, 1985.

3,571,655.—*Akira Tanimoto*, Yamatokoriyama-shi, Japan. ELECTRONIC INDICIA DISPLAY SYSTEM. Patent dated Mar. 23, 1971. Disclaimer filed Apr. 3, 1973, by the assignee, *Sharp Kabushiki Kaisha*.

Hereby enters this disclaimer to claim 1 of said patent.

3,576,063.—*Fransiscus C. Bakermans*, Harrisburg, Pa. BOBBIN LUGGER AND METHOD. Patent dated Apr. 27, 1971. Disclaimer filed Mar. 15, 1973, by the assignee, *E. I. du Pont de Nemours and Company*.

Hereby enters this disclaimer to claims 14 and 15 of said patent.

3,576,454.—*Laurence R. Beach, Jr.*, Boulder, Colo. and *Robert J. Black*, Los Gatos, Calif. DATA STORAGE ACCESSING MECHANISM WITH MOVING COIL MOTOR. Patent dated Apr. 27, 1971. Disclaimer filed Feb. 22, 1973, by the assignee, *International Business Machines Corporation*.

Hereby enters this disclaimer to all claims of said patent.

3,596,889.—*George F. Hanks*, Avon, Conn. GLASS MELTING FURNACE. Patent dated Aug. 3, 1971. Disclaimer filed Mar. 28, 1973, by the assignee, *Emhart Corporation*.

Hereby enters this disclaimer to claim 1 of said patent.

3,598,354.—*Philips J. Williams*, Bridgeport, Conn. CHAIR CONTROL STRUCTURE. Patent dated Aug. 10, 1971. Disclaimer filed Feb. 8, 1973, by the assignee *Stewart-Warner Corporation*.

Hereby enters this disclaimer to claims 1 through 11 of said patent.

3,607,263.—*Julius Battaglini*, Fairport, *John H. Goselin*, Rochester, and *Walter P. Horylev*, Hilton, N.Y. PHOTOGRAPHIC REVERSAL COLOR PROCESS. Patent dated Sept. 21, 1971. Disclaimer filed Feb. 26, 1973, by the assignee, *Eastman Kodak Company*.

Hereby enters this disclaimer to claims 1 to 7, inclusive, of said patent.

3,635,901.—*Federico Urgesi*, Vercelli, Italy and *Horst Rothert*, Berlin, Germany. PROCESS AND APPARATUS FOR CONTINUOUSLY POLYCONDENSING OR POLYMERIZING MONOMERS. Patent dated Jan. 18, 1972. Disclaimer filed Mar. 20, 1972, by the assignees, *Chatillon Societa Anonima Italiana per le Fibere Tessili Artificiali S.p.A.* and *Karl Fischer Apparate- u. Rohrleitungsbau*.

Hereby disclaim the portion of the term of the patent subsequent to Oct. 12, 1988.

3,660,036.—*Royal H. Benson*, Texas City, Tex. ANALYTICAL METHOD AND APPARATUS. Patent dated May 2, 1972. Disclaimer filed Jan. 7, 1972, by the assignee, *Monsanto Company*.

Hereby disclaims the portion of the term of the patent subsequent to Feb. 2, 1988.

3,663,224.—*Robert W. Hallman*, Utica, and *Gary W. Kurtz*, Southfield, Mich. ELECTRICAL COMPONENTS, ELECTRICAL CIRCUITS, AND THE LIKE, AND METHODS FOR MAKING THE SAME BY MEANS OF RADIATION SENSITIVE ELEMENTS. Patent dated May 16, 1972. Disclaimer filed Jan. 24, 1972, by the assignee, *Teeg Research, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Jan. 25, 1989.

3,663,775.—*Fordyce H. Horn*, deceased, late of Schenectady, by Helen W. Horn, executrix, Schenectady, N.Y., and *Joseph W. Porter*, and *Joseph L. Talento*, Media, Pa. VACUUM INTERRUPTER WITH CONTACTS CONTAINING A MINOR PERCENTAGE OF ALUMINUM. Patent dated May 16, 1972. Disclaimer filed May 4, 1971, by the assignee, *General Electric Company*.

Hereby disclaims the portion of the term of the patent subsequent to Feb. 24, 1987.

3,669,873.—*Joseph Jaffe*, Berkeley, and *James R. Kittrell*, Palos Verdes Estates, Calif. HYDROFINING-HYDROCRACKING PROCESS. Patent dated June 13, 1972. Disclaimer filed Feb. 7, 1972, by the assignee, *Chevron Research Company*.

Hereby disclaims the portion of the term of the patent subsequent to Oct. 20, 1987.

3,686,344.—*Erwin Brunner*, Ludwigshafen, *Rolf Platz*, Mannheim, and *Kurt Taglieber* and *Kurt Weinfurter*, Ludwigshafen, Germany. PRODUCTION OF ACETYLENE. Patent dated Aug. 22, 1972. Disclaimer filed May 15, 1972, by the assignee, *Badische Anilin- & Soda-Fabrik Aktiengesellschaft*.

Hereby disclaims the portion of the term of the patent subsequent to Apr. 18, 1989.

3,690,097.—*Dieter Widmaier*, Fellbach, Germany. APPARATUS HAVING INTERCONNECTED HYDRAULIC UNITS OPERABLE AS PUMPS, HYDRAULIC MOTORS, AND AS A HYDROSTATIC TRANSMISSION. Patent dated Sept. 12, 1972. Disclaimer filed June 5, 1972, by the assignee, *Robert Bosch GmbH*.

Hereby disclaims the portion of the term of the patent subsequent to Feb. 22, 1989.

3,692,713.—*Peter Spiros Columbus*, Whitestone, and *Ronald Thomas Mason*, New York, N.Y. LABELING ADHESIVE COMPOSITION. Patent dated Sept. 19, 1972. Disclaimer filed Mar. 22, 1972, by the inventors.

Hereby disclaim the portion of the term of the patent subsequent to June 2, 1987.

3,697,299.—*John E. P. Pickett*, Durham, N.C. MICROSCOPY TISSUE RECEPTACLE METHOD. Patent dated Oct. 10, 1972. Disclaimer filed Jan. 24, 1972, by the assignee, *Triangle Biomedical Equipment, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Oct. 27, 1987.

3,699,025.—*Philip W. Jenkins, Donald W. Heseltine,* and *John D. Mee,* Rochester, N.Y. PROCESS FOR RADIATION CROSS-LINKING UTILIZING N-HETEROCYCLIC COMPOUNDS WITH CLEAVABLE OXY SUBSTITUENTS. Patent dated Oct. 17, 1972. Disclaimer filed Aug. 4, 1972, by the assignee, *Eastman Kodak Company.*

Hereby disclaims the portion of the term of the patent subsequent to Oct. 26, 1988.

3,702,159.—*William L. Livingston,* Sharon, Mass. FIRE PROTECTION SYSTEM UTILIZING DIRECT DISCHARGE NOZZLES AND FILL-IN SPRINKLER HEADS. Patent dated Nov. 7, 1972. Disclaimer filed Aug. 23, 1972, by the assignee, *Factory Mutual Research Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to July 6, 1988.

3,705,691.—*Karol R. Zenker,* Needham, Mass. DISCHARGE HEAD UTILIZING A PRESSURE-RESPONSIVE DETENT MECHANISM. Patent dated Dec. 12, 1972. Disclaimer filed Aug. 7, 1972, by the assignee, *Factory Mutual Research Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to Mar. 28, 1989.

3,708,257.—*Rudolf Lowenfeld,* Buchschlag, and *Uwe Kosubek,* Offenbach, Main, Germany. PROCESS FOR THE DYEING OF TEXTILE MATERIAL MADE FROM MIXTURES OF POLYESTER AND CELLULOSIC FIBERS. Patent dated Jan. 2, 1973. Disclaimer filed June 12, 1972, by the assignee, *Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruening.*

Hereby disclaims the portion of the term of the patent subsequent to Nov. 30, 1988.

3,717,561.—*Orville W. Rigdon,* Groves, *Robert S. Edwards,* and *Edward H. Holst,* Nederland, Tex. PHOTONITROSATION OF NORMAL PARAFFINS. Patent dated Feb. 20, 1973. Disclaimer filed May 30, 1972, by the assignee, *Texaco Inc.*

Hereby disclaims the portion of the term of the patent subsequent to May 11, 1988.

3,723,113.—*William L. Goffe,* Webster, N.Y. POLYCHROMATIC ELECTROSOLOGRAPHIC IMAGING PROCESS. Patent dated Mar. 27, 1972. Disclaimer filed Aug. 22, 1972, by the assignee, *Xerox Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to July 14, 1987.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MAY 29, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-27-72
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides: Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-07-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	4-03-72
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	3-01-72
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	2-02-73
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	10-18-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	9-05-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-03-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	2-09-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	5-08-72
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	7-06-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	6-05-72
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	3-03-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	5-23-72
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	3-06-72
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	4-24-72

Expiration of patents: The patents within the range of numbers indicated below expire during June 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 704), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,748,388 to 2,752,594, inclusive
Plant Patents..... Numbers 1,481 to 1,491, inclusive

REISSUES

JUNE 12, 1973

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,662
COMPOSITIONS AND METHODS FOR TREATING METAL SURFACES

Andrew J. Hamilton, Philadelphia, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

No Drawing. Original No. 3,635,826, dated Jan. 18, 1972, Ser. No. 873,626, Nov. 3, 1969. Application for reissue Aug. 14, 1972, Ser. No. 280,582

Int. Cl. C23f *3/00;* **C23g** *1/08, 1/12*

U.S. Cl. 252—79.4 **20 Claims**

Acidic solutions having as an acidic component phosphoric acid and sulfuric acid, as a surfactant component a mixture of primary ethoxylated alcohol and modified polyethoxylated straight chain alcohol, and as a sequestrant component a mixture of oxalic acid and citric acid, are useful in cleaning aluminum, especially drawn and ironed aluminum cans coated with drawing oil, in cleaning, deoxidizing and brightening stainless steel, and in forming corrosion resistant and paint adherent iron phosphate coatings on ferriferous surfaces when applied thereto by the reverse roll coat method.

27,663
PROCESS FOR THE MANUFACTURE OF VINYL ESTERS OF CARBOXYLIC ACIDS

Hans Fernholz, Fischbach, Taunus, Hans-Joachim Schmidt, Frankfurt am Main, and Friedrich Wunder, Florsheim am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Original No. 3,625,998, dated Dec. 7, 1971, Ser. No. 708,509, Feb. 27, 1968. Application for reissue May 22, 1972, Ser. No. 255,869

Claims priority, application Germany, Mar. 3, 1967, F 51,719; Aug. 10, 1967, F 53,201

Int. Cl. C07c *67/04*

U.S. Cl. 260—497 A **14 Claims**

Preparation of vinyl esters of carboxylic acids in the gaseous phase by reacting ethylene, oxygen and carboxylic acids at elevated temperatures in the presence of a catalyst consisting of a salt of a noble metal of the eighth group of the periodic system and 0.01 to 200 g. cadmium in the form of a cadmium salt of a carboxylic acid, this catalyst being supported on a carrier.

27,664
METALLIC STRIP MILLING MACHINE

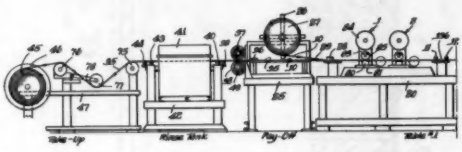
Stanley R. Hood, La Jolla, Calif., and Robert E. Truitt, Reading, Pa., assignors to Metals Engineering Company, Reading, Pa.

Original No. 3,494,253, dated Feb. 10, 1970, Ser. No. 733,579, May 31, 1968. Application for reissue Feb. 22, 1971, Ser. No. 109,067

Int. Cl. B23c *3/00, 9/00*

U.S. Cl. 90—21 **11 Claims**

A milling machine is provided for simultaneously milling contours in opposite sides of a metallic strip, wherein the metallic strip is fed from a supply reel at one end of the machine in one path lengthwise along the machine and is reversed upside down by a reversing roll at the other end of the machine and fed in another adjacent path lengthwise along the machine to a take-up reel at said one end of the machine. At least one milling unit is provided toward said one end of the machine for milling the upwardly facing side of the metallic strip in said one path, and at least one other milling unit is provided toward said other end of the machine for milling the upwardly facing side of the metallic strip in said other adjacent path. An inspection station including a comparator is located adjacent the center of the machine for inspecting the upwardly facing milled sides of the metallic strip passing thereby in said paths.



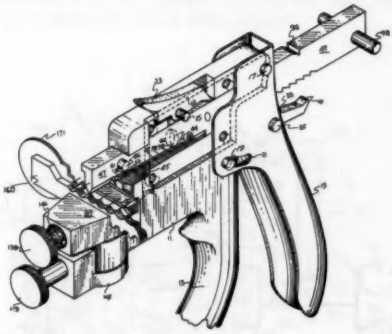
27,665
KEY CUTTING MACHINE

Roy Clifton Spain, P.O. Box 1668, Salem, Va. 24153

Original No. 3,499,366, dated Mar. 10, 1970, Ser. No. 653,856, July 17, 1967. Application for reissue Apr. 7, 1971, Ser. No. 131,992

Int. Cl. B23d *41/08*

U.S. Cl. 90—95 **8 Claims**



A key cutting machine has a rotatably mounted key holder where a key blank may be mounted for cutting. The key holder is positioned for the desired angle of the cut, and is also positioned to cut the desired V bit. The broach is then advanced to cut the selected V bit to the desired bitting level.

27,666

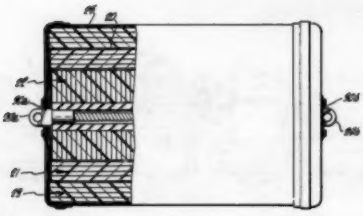
BOAT FENDER STRUCTURES

Duff L. Dean, deceased, late of North Hollywood, Calif., by Jean C. Dean, executrix, Palo Alto, Calif.; said Dean assignor to Triple D Industries, Inc., Burbank, Calif.

Original No. 3,455,269, dated July 15, 1969, Ser. No. 732,481, Apr. 26, 1968, which is a continuation-in-part of Ser. No. 596,892, Nov. 25, 1966. Application for reissue June 11, 1971, Ser. No. 152,458

Int. Cl. B63b *21/00*

U.S. Cl. 114—219 10 Claims



A boat fender structure having several different bagged configurations of buoyant material one inside of the other. The inside configuration comprises relatively rigid, disc-shaped sections stacked one next to the other. The outer configurations comprise sheets of relatively resilient, buoyant material which are wrapped in the form of a spiral.

27,667

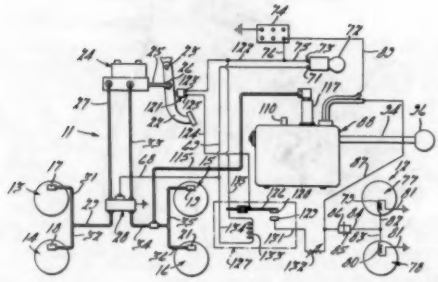
TRAILER SAFETY BRAKE CONSTRUCTION

David T. Ayers, Jr., Birmingham, Mich., assignor to Kelsey-Hayes Company

Original No. 3,507,541, dated Apr. 21, 1970, Ser. No. 685,794, Nov. 27, 1967. Application for reissue Sept. 14, 1970, Ser. No. 72,176

Int. Cl. B60t *13/70*

U.S. Cl. 303—7 12 Claims



A trailer safety brake construction for association with a towing vehicle having a primary brake system. The trailer safety brake construction includes a brake arrangement for the towed vehicle that is operative either selectively at the driver's direction, automatically upon application of the towing vehicle brakes or automatically in response to actuation of the brake pedal of the towing vehicle and failure of the brakes of the towing vehicle.

27,668

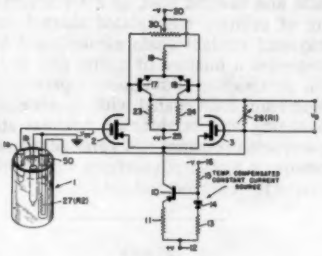
pH DETECTING DEVICE USING TEMPERATURE COMPENSATING FIELD-EFFECT TRANSISTOR DIFFERENTIAL AMPLIFIER

Daniel J. Soltz, Norristown, and Homer L. Greer, Bryn Athyn, Pa., assignors to Honeywell Inc., Minneapolis, Minn.

Original No. 3,431,508, dated Mar. 4, 1969, Ser. No. 534,834, Mar. 16, 1966. Application for reissue Sept. 4, 1970, Ser. No. 69,763

Int. Cl. H03f *3/68*

U.S. Cl. 330—30 D 6 Claims



There is provided a solid state electronic pH detector.

27,669

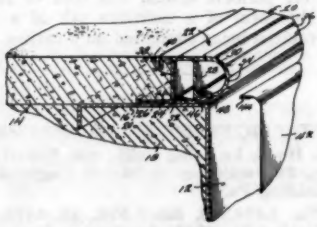
SWIMMING POOL COPING AND DECK CONSTRUCTION

Henry A. Rozanski, P.O. Box 127, R.D. 2, Elizabethtown, Pa. 17022

Original No. 3,524,291, dated Aug. 18, 1970, Ser. No. 726,180, May 2, 1968. Application for reissue Apr. 7, 1971, Ser. No. 135,510

Int. Cl. E04h *3/16, 7/18*

U.S. Cl. 52—169 2 Claims



A swimming pool coping and deck construction wherein a horizontal, elongate coping member of metal or plastic is secured to the top of a swimming pool wall and serves as a finished edge and as a form for concrete decking or as a finished edge for wooden decking. The swimming pool wall, the coping and the deck bond together to support the deck at the swimming pool wall independent of any backfill.

27,670

METHOD FOR PRODUCING A SMOKE-PREPARATION

Kazimierz Miler and Zbigniew Kozlowski, Warsaw, Poland, assignors to Instytut Przemyslu Miesnego, Warsaw, Poland

No Drawing. Original No. 3,445,248, dated May 20, 1969, Ser. No. 510,737, Apr. 7, 1965. Application for reissue May 19, 1971, Ser. No. 145,074

Claims priority, application Poland, Apr. 8, 1964, 104,255

Int. Cl. A23b *1/04, 3/04*

U.S. Cl. 99—229 1 Claim

Method of obtaining smoke which imparts smell and taste similar to those of conventionally smoke-dried sausages and which is free of carcinogenic compounds and ballast. Wood is distilled in excess air and smoke therefrom is absorbed in *an* alkaline solution. Undesired compounds are extracted from *the* solution with *an* organic solvent. [Carbon dioxide is introduced into] *Phenolates contained in* the aqueous layer [to convert phenolates] *are converted* into phenols which are then also extracted with the organic solvent *and then dissolved in sausage material.* The remaining aqueous layer is [dissolved in sausage material] *discarded.*

27,671

STAINLESS STEEL

Harry Tanczyn, Baltimore, Md., assignor to Armco Steel Corporation

No Drawing. Original No. 3,000,729, dated Sept. 19, 1961, Ser. No. 856,925, Dec. 3, 1959. Application for reissue Mar. 1, 1971, Ser. No. 111,774

Int. Cl. C22c *39/14*

U.S. Cl. 75—126 F 5 Claims

1. A quench hardenable straight-chromium, low carbon stainless steel [comprising] *essentially consisting of* 10.0% to 14.0% chromium, .07% to .14% carbon, [and remainder substantially all iron] in which the response in hardness of the metal to variation in tempering temperature thereof is appreciably retarded and improved toughness in the hardened and tempered condition is had, through the inclusion in the metal of .05% to .35% columbium-tantalum, and 0% to .20% vanadium, the precise amount of [these ingredients within these ranges] *columbium-tantalum* being about one to [three] *two* times the carbon content, *and remainder substantially all iron.*

27,672

ANALOGUE COMPUTER FOR LINEAR PROGRAMMING

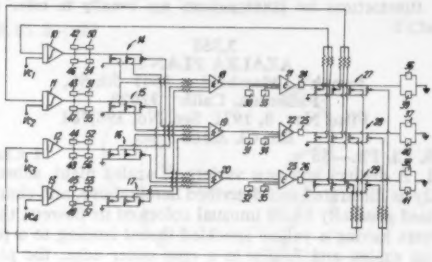
William John Niblock, Castlebellingham, Ireland, assignor to Oeleg Limited, Dublin, Ireland

Original No. 3,546,443, dated Dec. 8, 1970, Ser. No. 729,008, May 14, 1968. Application for reissue Sept. 1, 1971, Ser. No. 177,011

Claims priority, application Great Britain, May 17, 1967, 22,844/67

Int. Cl. G06g *7/34*

U.S. Cl. 235—180 14 Claims



An analogue computer arranged for the solution of linear-programming problems by the method of steepest ascents solves the set of differential equations in the form

$$\frac{dX_i}{dt} = -K_1(A_1f_{i1} + A_2f_{i2} + \ldots + A_Nf_{iN}) - K_2C_i$$

In order to optimise the value of an objective function which is represented by C_i. When the objective function is optimised the parameter A_i is zero far all values of i and specific values of X_i are determined. A_i is zero when values of

$$\sum_{i=1}^{N} f_{ij}$$

lie within predetermined limits. The invention provides defectors associated with each amplifier of the computer having limit-setting means whereby the operator can determine immediately if a limit has been set on the output signal from a specific amplifier and if the output signal therefrom is in fact constrained by that limit, by means of lamps forming part of each detector.

PLANT PATENTS

GRANTED JUNE 12, 1973

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,355
AZALEA PLANT

Joseph L. Mossholder, 5547 5th St., Fallbrook, Calif. 92028

Filed Nov. 8, 1971, Ser. No. 196,701
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—55 1 Claim

1. A distinct and new variety of azalea plant, substantially as illustrated and described hereinabove, and characterized generally by its unusual colors of its flowers, these flowers having a yellow speckled throat leading to a pink to an azalea and finally to a rose outer edge, the plant otherwise having the characteristics of an azalea plant as set forth and claimed in the Plant Patent 1,707.

3,356
AZALEA PLANT

Howard Kerrigan, 25783 Mission Blvd., Hayward, Calif. 94544

Filed Oct. 18, 1971, Ser. No. 190,236
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—56 1 Claim

1. A new and distinct variety of azalea plant of the Belgian-Indica type substantially as herein shown and described primarily characterized by: a combination of large, ruffled, flat, "hose-in-hose" flowers of an unusual shade of apricot pink and a strong, densely compact, low growing plant.

3,357
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Sept. 14, 1971, Ser. No. 180,532
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—74 1 Claim

1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness when compared to the parent cultivar Aglow by its flowers which are approximately ¼" smaller in diameter; its higher production, producing approximately 3 to 4 more flowers per stem; more orange coloration; approximately 2" to 3" less vigor; lighter foliage color; approximately three days earlier response, and its more uniform response within a flowering block.

3,358
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton Ohio

Filed Aug. 25, 1971, Ser. No. 175,011
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—77 1 Claim

1. A new and distinct cultivar of chrysanthemum characterized particularly as to uniqueness when compared to the cultivar Neptune by its response which is approximately 4–10 days earlier depending on the season of the year, a more vigorous variety which can be grown under medium rather than short treatment, stronger, heavier stems, no pinking of the flowers with a cool finish of 60° or less, no longitudinal petal roll under low light and also high temperature finishes of 70°–75° or above, no open center or significant petal reduction under low light or low temperature conditions, a wider, more spreading habit when both varieties are grown and flowered with their recommended response and treatments, average of one more break per plant, foliage approximately one-quarter inch shorter in length, a lighter foliage color, with the foliage being less indented with less serration.

3,359
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton Ohio

Filed Aug. 13, 1971, Ser. No. 171,782
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—78 1 Claim

1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness when compared to the parent cultivar Wildfire by its golden yellow flower color and by its 2–3 day earlier response when grown under comparable conditions.

PATENTS

GRANTED JUNE 12, 1973

GENERAL AND MECHANICAL

3,737,916
JACKET AND TROUSERS COMBINATION

Andre Grenier, 401 Moffat Street, Verdun 204, Quebec, Canada

Filed Mar. 15, 1971, Ser. No. 123,966
Int. Cl. A41d *1/00*
U.S. Cl. 2—70 6 Claims

Jacket and trousers combination wherein the jacket has, along the waist, an inner horizontal flap and the trousers likewise have, along the waist, an outer flap intended to cooperate with the inner flap to prevent entry of wind beneath the jacket. For that purpose, a first fastener closes the opening of the jacket and extends down along the vertical edge of the inner flap while a second fastener interlocks the lower horizontal edges of the inner flap and of the outer flap.

3,737,917
ADJUSTABLE PREFORMED NECKTIE

John E. Orr, 2620 48th Street, Lubbock, Tex.

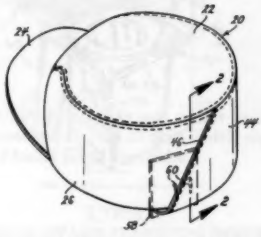
Filed Aug. 9, 1971, Ser. No. 170,108
Int. Cl. A41d *25/02*
U.S. Cl. 2—150 1 Claim

The invention discloses a necktie so designed that the knot stays tied and allows the portion around the neck to be unfastened and taken off the neck with the small portion of the tie sliding through the knot when refastened to adjust the neck portion to the user.

3,737,918
ADJUSTABLE-SIZE HEAD COVERING

Joseph Henschel, 7481 Cornell, St. Louis, Mo., and Edward Henschel, 8725 Warner, St. Louis, Mo.

Filed Aug. 16, 1971, Ser. No. 171,936
Int. Cl. A42b *1/22*
U.S. Cl. 2—197 9 Claims

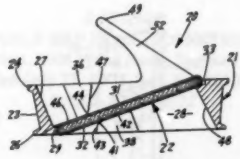


A head covering, which can be adjusted to accommodate substantially all adult head-sizes, has a plural-section side and releasable securing means to releasably hold the free edges of a lapping section and of a lapped section of that side in selectively different lapped positions. The lower end of the free edge of the lapping section of the side is spaced below the lower edge of the lapped section of that side, whenever those sections are unstressed and are in a condition of minimum lapping; but that lower end of that free edge engages and slightly raises the lower edge of that lapped section whenever those sections are in a condition of maximum lapping. A tab, carried by the lapping section of the side, requires the free edge of the lapped section of the side to be passed inwardly of the free edge of the lapping section of said side, and thus makes certain that the free edge of the lapped section is overlain and concealed by the free edge of the lapping section.

3,737,919
PIVOTED DISC-TYPE HEART VALVE

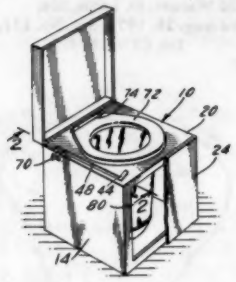
Francis W. Child, Maple Plain, Minn., assignor to The Regents of the University of Minnesota, Minneapolis, Minn.

Filed Mar. 16, 1971, Ser. No. 124,754
Int. Cl. A61f *1/22*; A16k *17/12*
U.S. Cl. 3—1 21 Claims



A heart valve having a base cooperating with a free floating pivoting disc to control the flow of blood through the valve. The disc has a substrate covered with a coating of silicon-alloyed Pyrolite carbon. The base can be a one-piece housing having side arms or two members joined together to confine the disc in a pivoting relationship with the housing. The disc pivots about a chordal axis and rotates about its center. The two members of the base have substrates with coatings of silicon-alloyed Pyrolite carbon.

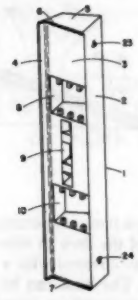
3,737,920
PORTABLE TOILET
Kenneth N. Savee, 11416 Sunnybrook Lane, Whittier, Calif.
Filed Apr. 26, 1971, Ser. No. 137,246
Int. Cl. A47k *11/00, 13/24*
U.S. Cl. 4—142 9 Claims



A portable toilet apparatus having a rotatable bowl, or platform, for supporting the lower end of a flexible, leak-proof bag of material, such as plastic, the upper end of the bag being fixed and aligned with an opening in the top wall of a housing, there being a toilet seat hinged to the top wall.

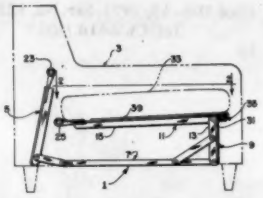
Within the bowl are a plurality of fins for positive engagement with the closed lower end of the bag. A spring is operably connected with the bowl to rotate it in one direction, and there is a manually actuatable lever for rotating the bowl in the opposite direction and, at the same time, put the spring under tension for rotating the bowl when the lever is released. Rotation of the bowl in one direction twists an intermediate part of the bag to seal the bag, and rotation of the bowl in the opposite direction untwists and opens the bag.

3,737,921
PERMANENT OR MOBILE SPLASH-GUARD
Stephen J. Baumrind, Charleston, S.C., assignor to Larry Harold Kline, Charleston, S.C., a part interest
Filed Dec. 30, 1971, Ser. No. 214,186
Int. Cl. A47k *3/22*
U.S. Cl. 4—148 22 Claims



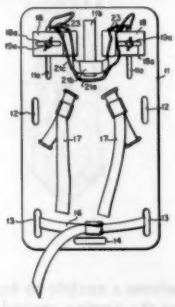
A splash-guard is disclosed which may be either permanent or mobile, which contains storage means and hanging means, and which may be effectively used on any corner of a bathtub.

3,737,922
SOFA BED FOLDING FIXTURE WITH SEAT CUSHION PAD
Worthy John Warner, Collinsville, Ill., assignor to The Foster Brothers Manufacturing Company, St. Louis, Mo.
Filed Feb. 1, 1972, Ser. No. 222,540
Int. Cl. A47c *17/13*
U.S. Cl. 5—13 6 Claims



A folding fixture for a sofa bed having a plurality of sections pivotally connected together end-to-end with each section having a pair of bars at the sides of the fixture, and a bedspring for supporting a mattress extending between and connected to the side bars. The fixture is foldable into a retracted position in the sofa with one of the sections constituting a foot section extending generally horizontally of the sofa and acting as seat section for supporting a seat cushion or cushions. This foot section has a cross bar at its free end and the fixture has a support bar extending transversely of its side bars adjacent the pivotal connection between the foot section and the next adjacent section (i.e., the intermediate section). This support bar is of hollow cross section and has a slot therein extending lengthwise thereof facing away from the cross bar when the fixture is folded in its retracted position. A pad secured to the fixture overlies the bedspring in the foot section when it is folded in its retracted position, the pad having a welt along one longitudinal margin insertable endwise into the support bar with the pad extending from the welt through the slot, the welt being of sufficient cross section to prevent the welt from being pulled through the slot. The other longitudinal margin of the pad is secured to the fixture adjacent the cross bar.

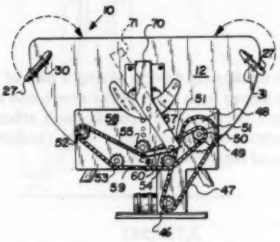
3,737,923
CERVICAL STABILIZATION DEVICE
Donald J. Prolo, 1163 Crescent Drive, San Jose, Calif.
Filed Sept. 27, 1971, Ser. No. 183,759
Int. Cl. A47b *83/04*
U.S. Cl. 5—82 5 Claims



A cervical spine immobilization device employs a rigid board member having movable block members which are adjustable in two directions on the surface of the board. Once

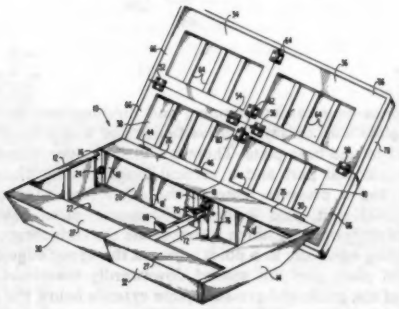
the patient's trunk is stabilized on the board, the block members are locked in position adjacent the patient's head to prevent lateral motion and rotation of the patient's head. A sling member is employed under the patient's chin and mastoid processes and is secured to the block members to prevent flexion and extension of the patient's head and neck.

3,737,924
ROCKING BED
George Alvin Davis, RFD No.3, Farmington, Maine
Filed Apr. 10, 1972, Ser. No. 242,492
Int. Cl. A47d *9/02*; F16h *19/06*
U.S. Cl. 5—108 15 Claims



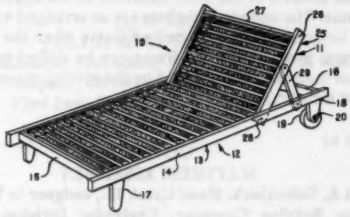
A hemicylindrical bed is driven by the movement of an arm for controlled movement and user security.

3,737,925
PREFABRICATED BED STRUCTURE
John A. Oxford, P.O. Box 647, Americus, Ga.
Filed Sept. 21, 1971, Ser. No. 182,421
Int. Cl. A47c *19/00*
U.S. Cl. 5—131 11 Claims



The invention relates to a bed structure capable of being assembled from a plurality of sectional interlockable elements, which upon assembly, provide a storage receptacle, the top structure of which supports the mattress, the top structure also including an arrangement to prevent relative longitudinal and lateral movement of the mattress on the top structure.

3,737,926
OUTDOOR FURNITURE CONSTRUCTION
Lloyd H. Hermanson, Chula Vista, Calif., assignor to John Hancock Furniture Manufacturing Co., San Diego, Calif.
Filed Feb. 19, 1971, Ser. No. 116,935
Int. Cl. A45f *1/00*; A47c *4/02*
U.S. Cl. 5—191 4 Claims

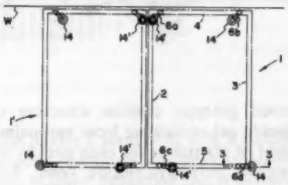


Outdoor furniture comprising seat and/or back frames with plastic straps attached to bars or rails which are attached to side members of frame inside the frame.

3,737,927
TRAPEZOIDAL STABILIZERS FOR INNER SPRING UNITS
John C. Kline, Merrick, and Albert F. Kronman, Locust Valley, both of N.Y., assignors to Eclipse Sleep Products, Inc., Brooklyn, N.Y.
Division of Ser. No. 1,228, Jan. 7, 1970. This application Mar. 5, 1972, Ser. No. 240,579
Int. Cl. A47c *23/00*
U.S. Cl. 5—260 4 Claims

Wire elements of generally trapezoidal shape having a variety of spring members in the non-parallel arms of the trapezoids are disclosed. The spring members are incorporated between the upper and lower edges of inner spring box springs, mattresses and the like to provide a wide variety of support to the edges. The spring members, upon the application of pressure flex inwardly or axially, permitting close spacing of individual trapezoidal elements.

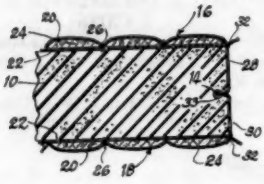
3,737,928
SHIFTABLE BED FRAME CONSTRUCTION
Roland A. Reuther, 5048 Weiss Road, Saginaw, Mich.
Filed July 12, 1971, Ser. No. 161,665
Int. Cl. A47c *19/12*
U.S. Cl. 5—312 11 Claims



A bed frame comprises a rectangular frame having a support member pivoted adjacent each of the four corners of the

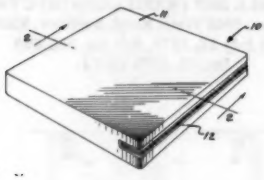
frame for rotation about a vertical axis. Each support member includes a ground-engaging foot which is spaced from the axis of rotation and each foot is accommodated in a socket formed in a base member. The length of the support members at the head end of the frame is less than the length of the support members at the foot end of the frame and the sockets in the base members at one side of the frame are substantially larger than the sockets in the base members at the opposite side of the frame. The support members are so arranged with respect to the longitudinal axis of the bed frame when the latter is in its normal position that the frame can be shifted relatively to the base members as permitted by the pivotal mounting of the support members.

3,737,929
MATTRESS ASSEMBLY
Gerald A. Golembeck, Hazel Crest, Ill., assignor to The United States Bedding Company, Englander Division, St. Paul, Minn.
Filed May 10, 1971, Ser. No. 141,697
Int. Cl. A47c *23/00*
U.S. Cl. 5—345 **8 Claims**



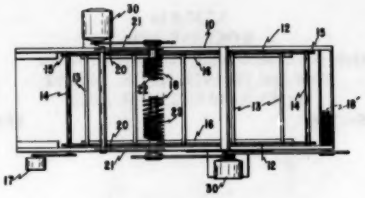
A mattress formed of a core of foamed flexible material having a border wire embedded in the vertical wall and to which the edges of the covering panel are attached for assembly.

3,737,930
CUSHION STRUCTURE
Lewis Oscar Smith, III, 516 Jay Lane, Dundee, Ill.
Filed July 19, 1971, Ser. No. 163,950
Int. Cl. A47c *27/08, 23/00*
U.S. Cl. 5—348 WB **7 Claims**



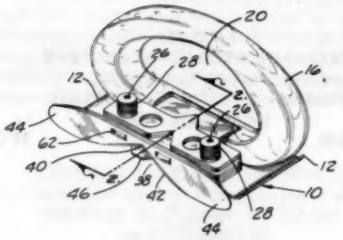
An improved gel-type cushion structure comprising a polyvinylchloride gel containing from approximately 6 to 14 parts by weight of plasticizer for each part by weight of high molecular weight polyvinylchloride resin. Preferably, the cushion structure includes approximately 9 parts by weight of plasticizer for each part by weight of high molecular weight polyvinylchloride resin together with an effective amount of suitable vinyl stabilizers.

3,737,931
HONEYCOMB UNCAPPING MACHINE
Roger R. Hodgson, 1318 Avenue M, Hawarden, Iowa
Filed Dec. 29, 1971, Ser. No. 213,288
Int. Cl. A01k *51/00*
U.S. Cl. 6—12 A **9 Claims**



A honeycomb uncapping device having a pair of unique arbors arranged to uncap both sides of the comb and a conveyor to carry the comb between the arbors. Each arbor carries a plurality of canted discs arranged with random circumferential location of maximum cant.

3,737,932
CARPET TRIMMING AND FINISHING DEVICE
Jimmie Joe Armijo, 14216 Fonseca, La Mirada, Calif.
Filed Jan. 27, 1972, Ser. No. 221,349
Int. Cl. B26b *3/08, 11/00*
U.S. Cl. 7—14.1 **10 Claims**



A once-over carpet trimming and finishing tool having a base plate with upwardly curved ends and with a handle attached to said base plate. There is a blade holder including a flat horizontal part and a vertical longitudinally elongated guide and a pressure plate at the outer free edge of the horizontal part, said guide and pressure plate having a downwardly opening notch intermediate the ends thereof and extending upwardly to a point adjacent the upper edge of the vertical plate part but spaced downwardly therefrom. The ends of the guide and pressure plate extends below the plane of the base plate and the base plate has a tongue that extends towards the plane and the vertical plate at the deepest or highest part of the notch and is bent slightly downwardly, the tongue being short of the plane of the guide and pressure plate. The edge of the latter plate defining the notch is beveled inwardly. Cutting blades are disposed beneath the horizontal part of the blade holder and extend to the adjacent side of the vertical guide and pressure plate, the cutting blades are oppositely arranged and a carpet may be cut upon movement of the device in either direction.

3,737,933

DEVICE FOR STRETCHING AND CARRYING A PAIR OF SHOES AND FOR HOLDING THEM UPRIGHT

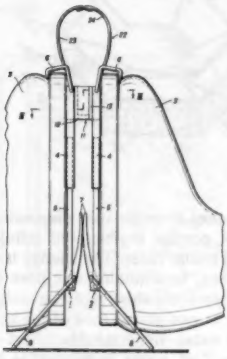
Heinrich Wunder, Rothschwaige near Dachau, Germany

Filed July 23, 1971, Ser. No. 165,468

Claims priority, application Germany, July 29, 1970, P 20 37 538.6

Int. Cl. A43d 5/00

U.S. Cl. 12—120.5 6 Claims



A device for stretching and carrying a pair of shoes and for holding them upright comprises two shoe stretchers, which stretch the soles of the shoes from the outside and are provided with means for detachably connecting the shoe stretchers and two spaced apart supporting members for holding the pair of shoes upright.

3,737,934

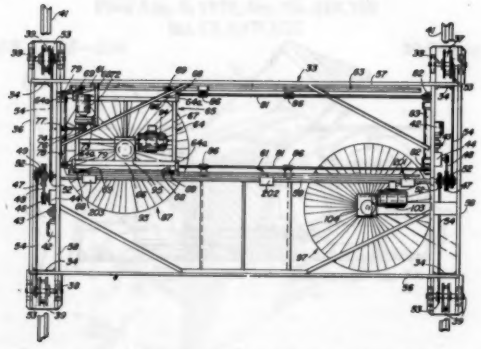
VEHICLE WASHING INSTALLATION WITH REVERSE WASH CYCLE

Thomas W. Skweres, Lisle, Ill., assignor to Ross and White Company, Wheeling, Ill.

Filed June 4, 1971, Ser. No. 149,995

Int. Cl. B60s 3/06

U.S. Cl. 15—21 E 4 Claims



A vehicle washing installation including a lengthwise movable wash rack for washing a stationary vehicle. The lengthwise movable wash rack includes two brushes of which one of the brushes is located to wash one of the sides of the vehicle during lengthwise movement of the rack. The other of the brushes is mounted for transverse movement and is actuated at the start and end of the lengthwise movement of the rack to wash the front and rear ends of the vehicle. During the lengthwise movement, the movable brush is located to wash the opposite side of the vehicle.

3,737,935

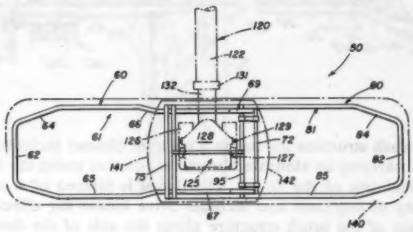
COLLAPSIBLE MOP HEAD

Julian I. Saltzstein, Cleveland, Tenn., assignor to American Uniform Company, Cleveland, Tenn.

Filed June 23, 1971, Ser. No. 155,693

Int. Cl. A47l 13/253

U.S. Cl. 15—147 A 14 Claims



A collapsible mop head for use with a mop swab having two mounting pockets therein, wherein the mop head includes two wings pivotally and longitudinally shiftably interconnected for movement between an extended operative position and a folded position, a keeper fixedly mounted on one of the wings and a latch fixedly mounted on the other of the wings, the latch and the keeper being shiftable longitudinally with the wings between a locking position holding the wings in the operative position thereof and a release position permitting pivotal movement of the wings with respect to each other to the folded position, resilient means interconnecting the wings and continually urging the wings into position wherein the latch is in position to engage the keeper, and a handle mounting structure on at least one of the wings.

3,737,936

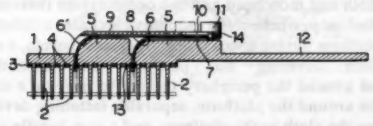
HAIR BRUSH WITH MEANS TO REMOVE FALLEN HAIRS

Shiro Uosaki, 19-2, 1-chome Kamijujo, Kita-ku, Tokyo, Japan

Filed Mar. 17, 1972, Ser. No. 235,572

Int. Cl. A46b 9/08

U.S. Cl. 15—169 5 Claims

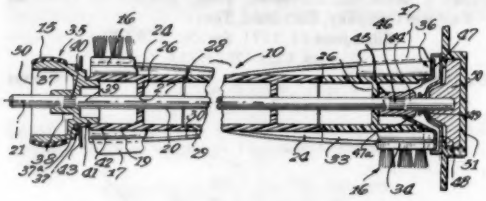


A hair brush having a plate body with a multiple number of projecting pieces plantingly equipped thereon, having an elevating plate to insert projecting pieces therein equipped so as to connect to the plate body through a knob and elastic plates and adapted to remove hairs twined round projecting pieces upon down operation.

3,737,937
ROTARY BRUSH CONSTRUCTION FOR VACUUM CLEANER

Erwin E. Nordeen, St. Paul, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Int. Cl. A46b 3/04, 9/02, 9/10
U.S. Cl. 15—182 14 Claims

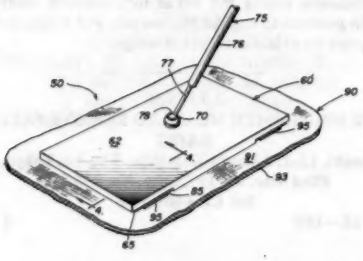


A brush structure for use in a vacuum cleaner including a dowel carrying an elongated brush for rotation about the longitudinal axis of the dowel. The dowel is formed of a multiplicity of segments and includes drive means for effecting rotation of the brush structure about the axis of the dowel. The dowel is further arranged to carry a beater bar in cooperation with the brush.

3,737,938
COMBINATION DUST CLOTH AND DUST MOP

Julian I. Saltzstein, Cleveland, Tenn., assignor to American Uniform Company, Cleveland, Tenn.

Filed June 24, 1971, Ser. No. 156,201
Int. Cl. A47l 13/46
U.S. Cl. 15—231 18 Claims

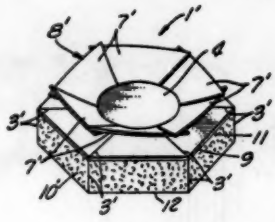


A dust cloth and mop head and the combination thereof to provide a dust mop, wherein the mop head includes a substantially flat platform having spaced-apart recesses therein, a soft pliable cloth covering the platform and extending therebeyond around the periphery thereof to provide a marginal portion around the platform, separable fastening devices for mounting the cloth to the platform, and a mop handle connected to the platform, whereby the cloth before attachment to the mop head may be first used as a dust cloth and thereafter the cloth may be mounted on said mop head by placing the cloth on a support surface with the back surface disposed upwardly and pressing the fastening member on the platform against the fastening member on the cloth to provide a dust mop and thereafter the cloth may be removed from the mop head by fixedly holding the marginal portion and pulling the mop head therefrom.

3,737,939
DISPOSABLE TOILET APPLICATOR

John Leslie Jones, Sr., 1070 Glen Oaks Boulevard, Pasadena, Calif.

Filed Apr. 7, 1969, Ser. No. 814,025
Int. Cl. A47k 7/03
U.S. Cl. 15—244 A 6 Claims

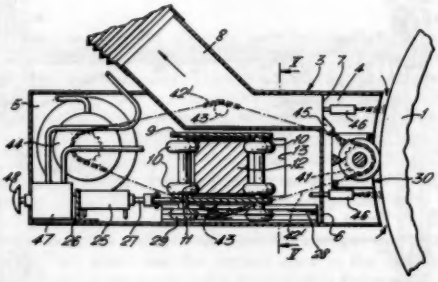


This invention teaches a single use, disposable toilet applicator having a dry, porous, regenerated cellulose sponge, with a pair of parallel planar faces. The sponge is compressed normal to a planar face, to minimum size pore openings. A first, thin, water impermeable sheet is completely coplanarly contiguously secured to one planar face of the sponge, and a second, rigid, thin water impermeable sheet completely coplanarly covers the first, water impermeable sheet and is secured over the central bonded area to the first sheet. The compressed sponge volume, the first water impermeable sheet, and the second water impermeable sheet are bonded together in a laminated composite. A multiplicity of incised slit openings extending from the toilet applicator perimeter to the perimeter of the central bonded area perimeter form a multiplicity of flexible toilet applicator leaves, which also include foldable applicator handle means.

3,737,940
CLEANING APPARATUS FOR OFFSET PRINTING MACHINES

Hans Jacob Moestue, Osteraskroken 9, Osteras, and Clarin Moestue, Vidars vei 23, Jar, both of Norway

Filed Dec. 6, 1971, Ser. No. 205,262
Claims priority, application Norway, Dec. 10, 1970, 4763/70; May 25, 1971, 1957/71
Int. Cl. A47l 5/38
U.S. Cl. 15—302 7 Claims



A roller-shaped cleaning tool for a rotating cylinder surface in an offset press is rotatably mounted in a housing that is open in front. The cleaning tool is presented to the cylinder surface through the opening in the housing. The cleaning tool produces an atmosphere of atomized cleaning liquid and washed-off dirt in the housing and this atmosphere is drawn

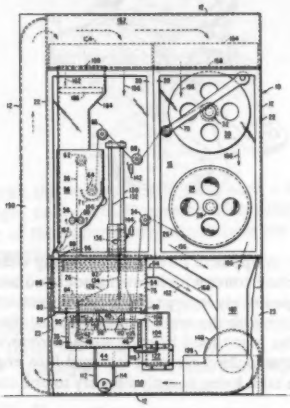
off through an outlet which is connected to a source of sub-atmospheric pressure.

3,737,941

APPARATUS FOR CLEANING FILM

Arthur J. Miller, Fort Lee, N.J.; Raymond Perkins, Plainville, and Harold E. Sullivan, East Hampton, both of Conn., assignors to Jerome B. Gracey, Hartford and Dominic J. Squatrito, Manchester, both of Conn., part interest to each

Filed July 3, 1969, Ser. No. 838,760
Int. Cl. B08b 7/02
U.S. Cl. 15—100 11 Claims



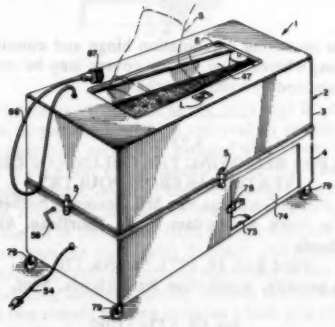
An ultrasonic film cleaner has an enclosed shell within which is provided an internal solvent recovery system for recapturing solvent stripped from the ultrasonically cleaned film. The recovered solvent is recirculated to fluid nozzles which add solvent to a cleaning tank to skim dirty solvent over a spillway into an offset boiling tank, where contaminates precipitated to avoid build up of contamination in the solvent bath. An air filtration and recirculation system is provided to maintain a dust free environment within the shell. The film transport mechanism preferably has rolls with snap-on mountings for ease in adapting the cleaner for various width films.

3,737,942

POWER OPERATED CLEANING DEVICE

Charles H. Casey, Rt. 5, Box 91, Winchester, Va.

Filed Aug. 6, 1971, Ser. No. 169,769
Int. Cl. A47l 5/22
U.S. Cl. 15—339 28 Claims



A power operated cleaning device comprising a housing enclosing power operated brush means and vacuum means for cleaning dirt and the like from articles such as shoes and other articles.

3,737,943

SUSPENSION CLIP FOR TEXTILES OR THE LIKE

Elsa Store, Seierstenvn. 6, Drobak, Norway

Filed June 24, 1971, Ser. No. 156,312
Claims priority, application Norway, June 24, 1970, 2470
Int. Cl. E05d 13/02
U.S. Cl. 16—87.2 2 Claims

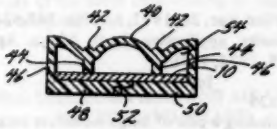
A suspension clip for curtains or the like, made in one piece from plastic material having a sliding member for sliding in a rod track or the like, and a clamping member for gripping the curtain material. The clamping member comprises a series of thin pins or hooks which are locked together by a cooperative locking means, preferably in the form of push button members. The plastic material is formed to substantially similar branches which are joined together at their head portions, and these two branches are locked together by the push button members so that the pins or hooks engage the curtains and the suspension head is free to slide in grooves, slots or the like in a curtain rod or the like.

3,737,944

HANDLE CONSTRUCTION

Marton Szabo, 1440 Sheridan Street, Apt. G-5, Camden, N.J., and George W. Bush, 319 Graisbury Avenue, Haddonfield, N.J.

Filed Sept. 16, 1971, Ser. No. 181,068
Int. Cl. A47b 95/02
U.S. Cl. 16—110 9 Claims



A handle construction having a spring steel bar whose ends are offset either from the plane of the bar or relative to the width thereof and a thermoplastic handgrip embracing the body portion of the bar between the offset ends. The handgrip is in the form of a longitudinally split sleeve which is wrapped around the body portion of the bar with the opposite longitudinal ends of the split being mated and sealed to form a seam on the underside of the handgrip which is substantially in the same plane of the underside.

3,737,945

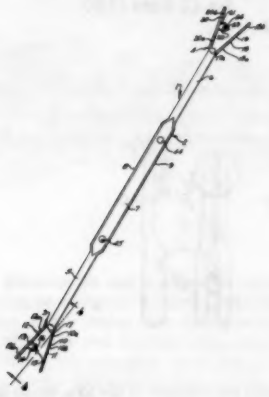
HANDLE MEANS

James J. Gould, Cincinnati, Ohio, assignor to Duro Paper Bag Manufacturing Company, Ludlow, Ky.

Filed Nov. 24, 1971, Ser. No. 201,774

Int. Cl. A47b *95/02*

U.S. Cl. 16—125 10 Claims



Handle means affixable to articles to be carried such as paper and plastic bags and the like. Each handle means comprises an elongated body of resilient material terminating in enlarged bifurcated ends. A first bifurcation of each end has a perforation therethrough. The second bifurcation of each end has a headed pin thereon adapted to pass through a portion of the article to be carried and the perforation in the first bifurcation, engaging the first bifurcation with a snap fit, whereby the ends of the handle means are affixed to the article. Each headed pin has a breakaway point thereon by which the pin may perforate the portion of the article through which it passes and which may be readily removed when the handle means has been affixed to the article. When the handle means is used in pairs, additional means may be provided whereby the bodies of the handles may be joined together for convenience in carrying.

3,737,946

HINGES AND MORE PARTICULARLY TO HINGES SUITABLE FOR ADJUSTABLE BACK RESTS OF SEATING MEANS

Karl Giuliani, 4 Windrush Avenue, Linkside, Port Elizabeth, South Africa

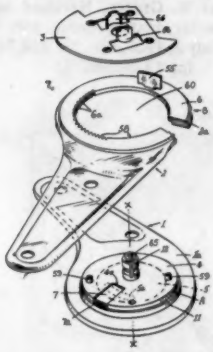
Filed Apr. 28, 1972, Ser. No. 248,534

Claims priority, application South Africa, Apr. 30, 1971, 2831; Mar. 15, 1972, 1778

Int. Cl. E05d *11/10*

U.S. Cl. 16—139 16 Claims

A hinge including a pair of hinge members rotatable relative to each other about a hinge axis; an arcuate toothed rack of concave configuration fast with the one hinge member and presenting teeth which are directed radially inwardly towards the hinge axis; a toothed locking element which is radially but not circumferentially movable relative to the other hinge member and which is interengageable with the arcuate rack in a plurality of circumferentially spaced positions; and actuating means for moving the locking element into and out of engagement with the arcuate rack. The actuating means comprises the combination of a single rotary actuating member located at least partially within a bore in at least one of the hinge members and rotatable about the hinge axis; two arcuate cam surface zones on the actuating member and disposed about the hinge axis, the spacing of each cam surface zone from the hinge axis varying between a maximum and a minimum value along the cam surface zone; a single cam follower connected to the locking element; and an arcuate bearing surface zone on the follower for each cam surface zone, rotation of the actuating member in opposite directions engaging either one of the two cam surface zones with its own associated bearing surface zone so as positively to urge the locking element into and out of engagement with the arcuate rack, at least the cam surface zone and the associated bearing surface zone which are engaged when the locking element is urged into engagement with the arcuate rack being complementary to one another.



3,737,947

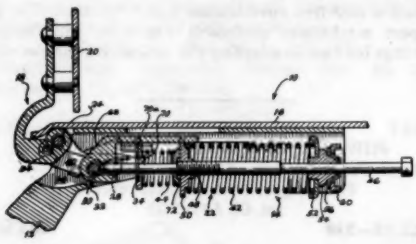
TWO LID COUNTERBALANCE MECHANISM

Carl H. Little, Jamestown, N.Y., assignor to Weber-Knapp Company, Jamestown, N.Y.

Filed Dec. 13, 1971, Ser. No. 207,141

Int. Cl. E05f *1/12*

U.S. Cl. 16—190 7 Claims



A cover mounting combination hinge and counterbalance mechanism, wherein two lids or covers may be carried and counterbalanced by a single mechanism.

3,737,948

DEVICE FOR REMOVING THE COLUMN OF CERVICAL VERTEBRAS FROM POULTRY

Martinus Petrus Gerardus Van Mil, Boxmeer, Netherlands, assignor to Stork Amsterdam N. V., Sportlaan, Amstelveen, Netherlands

Filed Aug. 10, 1971, Ser. No. 170,437

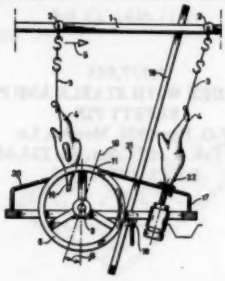
Claims priority, application Netherlands, Sept. 17, 1970, 13735

Int. Cl. A22c *21/00*

U.S. Cl. 17—11 3 Claims

A device for removing the column of cervical vertebras from poultry, comprising a horizontal conveyor by which the

birds, hanging by their legs are advanced, and under the conveyor two cooperating driven discs, which discs diverge at an acute angle α — measured in a plane which makes an acute



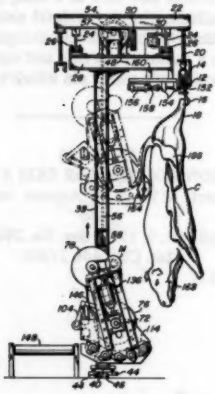
angle β with the vertical— and have each a bent-over edge, which edges only partially overlap each other in and in the proximity of the upper intersection where the edges intersect the aforementioned plane.

3,737,949

METHOD AND APPARATUS FOR PROCESSING HIDES

Albert D. Davis, 117 E. 21st Street, Spencer, Iowa

Filed Jan. 25, 1971, Ser. No. 109,339
Int. Cl. A22b *5/16*
U.S. Cl. 17—21 23 Claims



A beef carcass suspended at the hind legs from a moving conveyor, is prepared for hide removal by means of a deep rumping operation performed by hand which frees the tail and provides at each side of the carcass a hide flap. The underside of the hide is slitted down to the forequarters and head, and a pocket is formed at the top of the loin to free the tail and prevent the fat in this region from being pulled off as the hide is stripped from the pack, sides, forelegs, and head in one continuous rapid operation, the head remaining on the carcass.

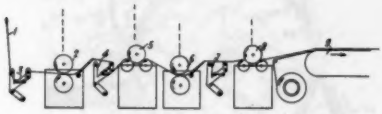
The stripping involves initially feeding the tail of an animal between two closely moving surfaces which grip progressively the tail, the hind leg flaps, the shoulder portions of the hide, and finally the foreleg and head portions, the stripping continuing uninterruptedly until the head remaining on the carcass is finally bared of hide.

3,737,950

APPARATUS TO PRODUCE A PLANE PADDING WEB

Robert Bolliand, and Claude Saligny, both of Lyon, France, assignors to Societe Rhodiaceta, Paris, France

Filed July 12, 1971, Ser. No. 161,627
Claims priority, application France, July 10, 1970, 7026734
Int. Cl. D01d *11/02*
U.S. Cl. 19—65 T 7 Claims



Method and apparatus for making padding web is disclosed, wherein uncut, highly crimped, tensioned tow is passed through a series of rollers. The rollers are arranged in at least two sets of pairs, the rollers of each pair rotating at different peripheral velocities. The ratio of peripheral velocities is higher for the upstream pair of rollers. The upper rollers of the two pairs rotates faster than the lower rollers thereof.

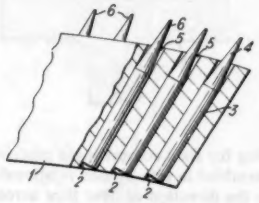
The padding web produced is suitable for stuffing articles such as bed covers, sleeping bags, anoraks, and the like.

3,737,951

CARD CLOTHING

Arthur Patrick Pringle Mackie, Albert Foundry, Belfast, Ireland, assignor to James Mackie & Sons Limited, Belfast, Northern Ireland

Filed Oct. 19, 1970, Ser. No. 82,415
Claims priority, application Great Britain, Oct. 27, 1969, 52,550/69
Int. Cl. D01g *15/26*
U.S. Cl. 19—97 7 Claims



Clothing for the cylinder of a card particularly for use with wool and synthetic fibers comprises a stave having pins mounted in it at a density greater than ten pins per square centimeter with each pin projecting from the stave by a length of less than 2½ mm. The length of taper of each pin is greater than the projecting length so that part of the taper is located within the body of the stave thus leading to improved carding of fine denier material.

3,737,952

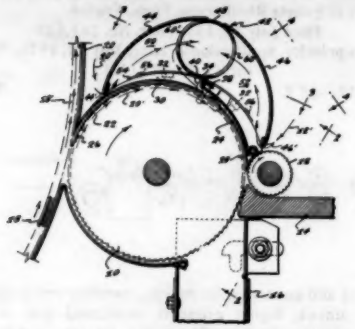
CARDING MACHINE FIBER AND AIR CONTROL METHOD AND MEANS

James Everett O'Neal; Josef Karl Gunter, and Colie Walton Gunter, all of c/o Gunter & Cooke, Inc., P. O. Box 339, Durham, N.C.

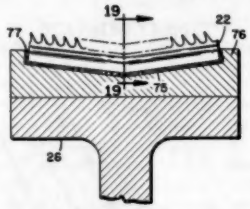
Continuation of Ser. No. 629,842, Feb. 14, 1967, abandoned, which is a continuation-in-part of Ser. No. 535,126, March 17, 1966, abandoned. This application Apr. 30, 1969, Ser. No. 820,684
Int. Cl. D01g *15/76*
U.S. Cl. 19—107 10 Claims

A method and enabling means is provided for controlling to substantially improved advantage the troublesome air currents

generated in carding machines at the surface of the lickerin roll beyond its tangency with the carding cylinder, and for additionally and comparably controlling the character of fiber going forward on any carding machine roll surface at which appreciable air currents are generated.

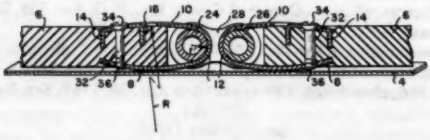


3,737,953
CARD CLOTHING
Alfred R. Bechtel, Jr., Portsmouth, R.I., assignor to Ashworth Bros. Inc., Fall River, Mass.
Filed Sept. 11, 1970, Ser. No. 71,481
Int. Cl. D01g *15/26*
U.S. Cl. 19—113 1 Claim



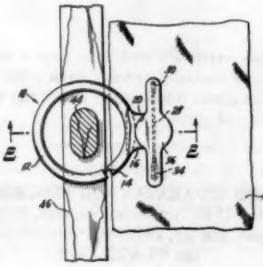
Card clothing for flats comprising a plurality of elongated wire strips assembled in side by side relationship and inclined at an angle to the direction of fiber flow across the flats. The strips have upstanding portions laterally spaced apart, and each upstanding portion provides a row of teeth having sides inclined at an angle to the direction of fiber flow.

3,737,954
CONNECTOR FOR FLEXIBLE BELTS
Charles P. Tabler, 2560 Rosary Circle, Hamilton, Ohio
Filed Oct. 19, 1970, Ser. No. 81,995
Int. Cl. F16g *3/07*
U.S. Cl. 24—31 C 7 Claims



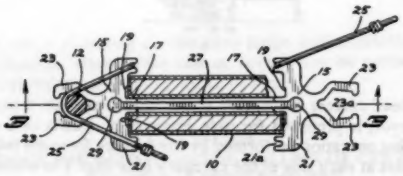
A connector for belt ends for belt conveyors in which a belt is guided by a tube. A clamp member is secured to each end of the belt and a hinge pivotally connects the clamps. The clamps are provided with long sharp barbs which spread the reenforcing cords of the belt as the barbs penetrate the belt on assembly to thereby reduce the number of cords which are cut during the application of the clamp members. The legs of the clamp are formed as arcs of a curve with a long radius to provide minimum friction and erosion of the conveyor tube.

3,737,955
BLANKET HOLDER WITH STABLE AND PROTECTED SAFETY PIN
Louise Z. Hakim, P.O. Box 4826, Monroe, La.
Filed Feb. 8, 1972, Ser. No. 224,443
Int. Cl. A47c *21/02*
U.S. Cl. 24—72.5 1 Claim



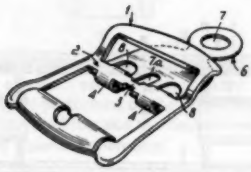
An improved blanket holder for infant blankets of the type applied to the vertical side rails of a crib, wherein the holder includes a split ring having an integral extension at one side thereof. The extension comprises an elongated body member perpendicular to a radius of the ring and serving to fixedly encase the back portion of a safety pin which is sealed therein.

3,737,956
COMBINATION HOLDER FOR SKIS AND SKI POLES
Robert J. Gragert, 4616-40 1/2 Avenue North, Minneapolis, Minn.
Filed Dec. 9, 1971, Ser. No. 206,338
Int. Cl. A44b *21/00*
U.S. Cl. 24—815 K 2 Claims



This is a combination holder for skis and ski poles which includes a pair of edge engaging members with a resilient anchoring element extending therebetween to securely hold said members against the edges of a pair of skis positioned in superposed relationship, each of said members being provided with a pair of pole gripping arms and having resilient means for holding the poles in said arms in substantially parallel relation to the skis on opposite sides thereof.

3,737,957
BUCKLE
Adalberto Steinberg, Via Mancini 5, Milan, Italy
Filed Sept. 25, 1970, Ser. No. 75,637
Claims priority, application Italy, Sept. 26, 1969, 22570 A/69
Int. Cl. A44b *11/24*
U.S. Cl. 24—188 1 Claim



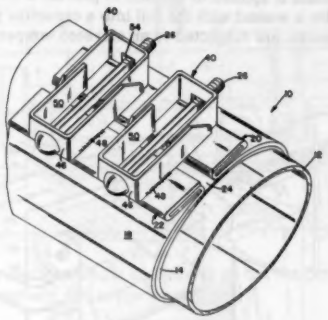
A buckle structure comprising a buckle frame of substantially rectangular shape and a plate member hingedly connected thereto and secured to footwear articles, clothing articles and the like. The buckle has an intermediate transverse bar provided with lugs projecting from this bar and folded towards each other for receiving the plate member. The plate member is provided with eyelets defined by a flat border portion which is designed to be received within the folded lugs.

3,737,958
QUICK RELEASE LOCKING MECHANISM
Ernest S. Sharaf, Rockport, Mass., assignor to Questor Corporation, Toledo, Ohio
Filed July 26, 1971, Ser. No. 166,092
Int. Cl. A44b *19/00*; F16m *13/02*; A47c *31/00*
U.S. Cl. 24—230 AK 2 Claims

A quick release mechanism for a seat belt used with an infant's car seat. The belt is secured at one end to one upright post of the seat. The other upright post includes a rigid device having a pivoted finger which is resiliently biased towards the rigid device. The belt terminates in a flat plate having a hole therein. The rigid device has a similar hole and the finger has a boss which passes through both holes so as to secure the belt.

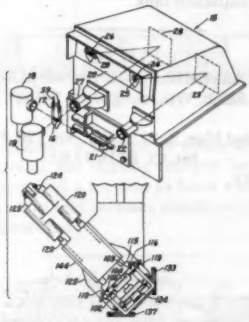
3,737,959
PIPE CLAMP MADE OF NON-CAST MATERIALS
Telford L. Smith, Millbrae, and Frank E. Turner, San Mateo, both of Calif., assignors to Smith-Blair Inc., Pittsburgh, Pa.
Filed Oct. 29, 1971, Ser. No. 193,774
Int. Cl. B65d *63/06*
U.S. Cl. 24—279 12 Claims

An improved pipe clamp comprised of rigid lugs fixed to the ends of a flexible band and fabricated from formed elements made of rolled or extruded metal stock. Each lug is comprised of a lug bar that retains one end of the clamp band. One or more U-shaped elements, welded to the lug bar have finger



portions that extend perpendicular to it and engage the lug bar of the opposing lug. The U-shaped elements on different embodiments may have separable transverse portions to allow a drop-in bolt feature.

3,737,960
REFLECTOR ALIGNMENT APPARATUS
John A. Billson, Willoughby, Ohio, assignor to General Electric Company, Schenectady, N.Y.
Filed Dec. 29, 1971, Ser. No. 213,291
Int. Cl. H01j *9/18*
U.S. Cl. 29—25.15 9 Claims

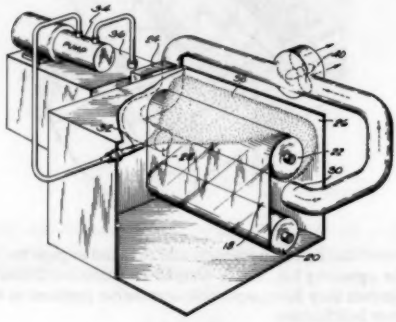


An apparatus for accurately aligning and attaching a lamp to support wires to form a mount and positioning and attaching the mount in metal thimbles of a reflector section comprising an adjustable lamp holder, a support wire holder, an optical apparatus for aligning the lamp's light source, an attaching device for forming a mount and a fixture for positioning the mount at the optical focus of the reflector and attaching the support wires to thimbles embedded in the reflector.

3,737,961
METHOD OF MAKING AN IMPREGNATED PLASTIC DIELECTRIC CAPACITOR
John Lapp, Franklin, and Norbert R. Weller, Greendale, both of Wis., assignors to McGraw-Edison Company, Milwaukee, Wis.
Filed Dec. 8, 1971, Ser. No. 206,044
Int. Cl. H01g *13/04*
U.S. Cl. 29—25.42 10 Claims

An all film capacitor includes a sheet of plastic material in film form wound with the capacitor electrode foil, the film

being capable of impregnation by a dielectric liquid medium and having been wetted by the dielectric liquid prior to impregnation. The plastic film and dielectric liquid form the dielectric system of the capacitor. In processing, a dielectric liquid medium is applied to the film to provide a wet film and the wet film is wound with the foil into a capacitor pack. The pack, or packs, are subjected to an elevated temperature and



vacuum to draw off volatile material such as water vapor, i.e., the pack is dried. Subsequent to drying, the pack, or packs, are positioned in a capacitor tank for soaking in the dielectric liquid, again at an elevated temperature and under a vacuum. Complete impregnation of the film by the liquid dielectric occurs during soaking. If desired, the same film material can be wound on the outside of the capacitor packs to insulate the packs from the capacitor tank.

3,737,962

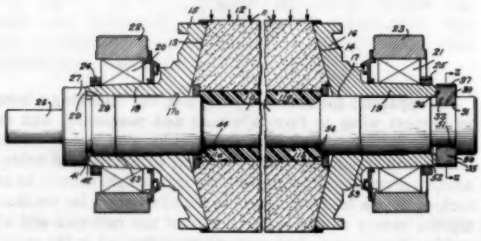
ROLL ASSEMBLY FOR PAPER MACHINE

Lester M. Hill, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Mar. 3, 1971, Ser. No. 120,396

Int. Cl. B21b *31/08*

U.S. Cl. 29—123 **7 Claims**



A roll assembly for a paper making machine with a rotary shaft and a roll shell surrounding the shaft to rotate therewith, the shell being of a material such as granite and being under compression by being held by an annular compression head at one end of the shaft and another annular compression head at the other end of the shaft. The first head axially engages a radial surface on the shaft and the other head axially engages a split collar axially engaging a radial surface on the shaft. In one arrangement, the collar is positioned in the recess by relatively extending the length of the shaft preferably by heating it relative to the granite roll shell.

3,737,963

ROLLER CONSTRUCTION

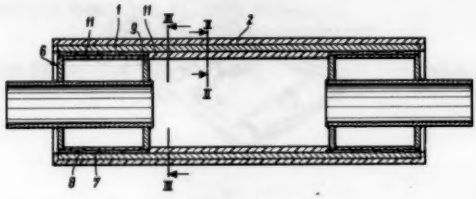
Simon Postulka, Markoldenorf; Hermann Vordergrugge, and Hans-Christof Thermann, both of Windelsbleiche, all of Germany, assignors to Firma Hermann Windel, Windelsbleiche b. Bielefeld, Germany

Filed Feb. 2, 1971, Ser. No. 111,988

Claims priority, application Germany, Feb. 7, 1970, P 20 05 619.3

Int. Cl. B21b *31/08*

U.S. Cl. 29—130 **16 Claims**



A roller for textile or similar machines is made by producing a calibrated tube of predetermined configuration which is permeable to a synthetic plastic material, and then embedding it in the synthetic plastic material so that the latter forms a jacket around the tube and also penetrates interstices of the latter.

3,737,964

EXPANDED STRUCTURAL MEMBERS

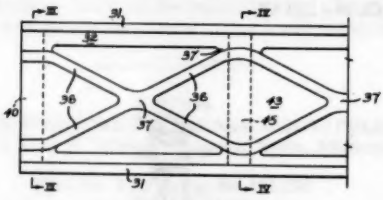
Harold Rex Jury, Norwood, Australia, assignor to Jury & Spiers Proprietary Limited, Norwood, Australia

Filed July 27, 1971, Ser. No. 166,390

Claims priority, application Australia, July 31, 1970, 2042

Int. Cl. B23p *17/00*

U.S. Cl. 29—155 R **10 Claims**



A method of forming an expanded structural member, and a structural member formed thereby, wherein spaced parallel longitudinally extending rows of openings are pierced in a web of a member of ductile metal which has a constant cross-sectional shape, the openings of each row overlapping those of the next adjacent row so as to form a series of strut forming elements in the web, forcing the parallel edges of the member apart so as to stretch the elements and thus form struts, the edge portions thereby becoming chords, and positioning load transmitting members between chords so as to transmit load imposed on one of the chords to the other chord.

3,737,965

ROLLER BEARING RINGS

Edward Ronald Knapp, Duston, England, assignor to The Timken Company, Canton, Ohio

Filed June 14, 1971, Ser. No. 152,703

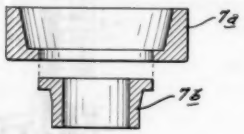
Claims priority, application Great Britain, June 18, 1970, 29,747/70

Int. Cl. B21h *1/12*; B21k *1/04*; B23p *11/00*

U.S. Cl. 29—148.4 R **8 Claims**

Annular mechanical elements such as bearing rings for roller bearings are manufactured by forming an annular steel

blank of predetermined dimensions by a machining operation and subjecting the blank to a cold extrusions operation to provide an annular element of desired shape. The blank may be formed by the cold extrusion process into a multiplex struc-



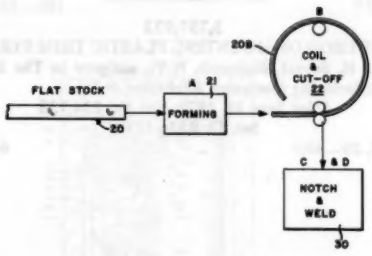
ture which can be separated by a punching operation into two or more annular elements each of desired shape. The machining operation may be performed on the end of a seamless steel tube or a hot roller steel bar and the desired annular blank is then separated by a parting operation.

3,737,966

METHOD OF CONSTRUCTING A BLADED BLOWER WHEEL

James R. Ranz, Wilmington, Ohio, assignor to Lau Incorporated, Dayton, Ohio

Filed Jan. 13, 1971, Ser. No. 106,021
Int. Cl. B23p *15/02, 15/04*
U.S. Cl. 29—156.8 CF **3 Claims**



An improved method of constructing a bladed blower wheel and an improved blower wheel are disclosed in which the end rings are formed from flat stock material which has been partially preformed by rolling and cut to the desired length. The center disks are stamped from sheet material which may be of a different gauge than that of the end rings and formed with peripheral notches and a U-shaped crimp to engage the inner section of each of the blades. The arrangement permits selection of center disk material without regard to end ring material, provides versatility in selecting blower wheel size and eliminates production inventory balance problems which occur when the center disk and end rings are stamped from the same material.

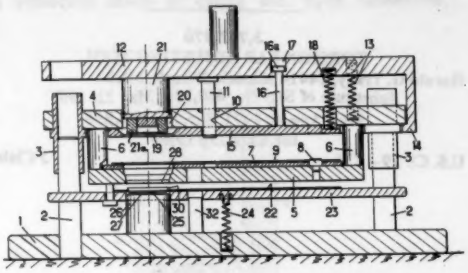
3,737,967

DEVICE FOR SETTING FIRE RINGS IN CYLINDER HEAD GASKETS

Pierre Pommier, Saint-Priest, France, assignor to Societe Anonyme dite: Cefilac, Paris, France

Division of Ser. No. 77,841, Oct. 5, 1970, Pat. No. 3,694,889.
This application July 13, 1972, Ser. No. 271,267
Claims priority, application France, Oct. 10, 1969, 6934752
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 B **10 Claims**

Device for setting fire rings in gaskets which comprises means for supporting a metallic sheet provided with holes having upstanding cylindrical rims dimensioned and positioned to register with holes in the gasket, means for cutting rings encircling these rims, means for locating the gasket on the rings so that the rims project through the gasket holes, and means for pressing the rims are down against the gasket. The invention



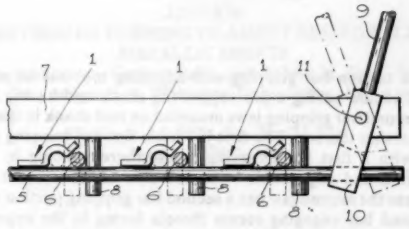
includes a machine which carries out all but the first of these steps successively and automatically.

3,737,968

METHOD FOR JOINING A NUMBER OF REINFORCING BARS SIMULTANEOUSLY AND A TOOL FOR CARRYING OUT THIS METHOD

Friedrich Karl Bender, R.R. No. 4, Box 181, Starkville, Miss.

Filed Nov. 12, 1971, Ser. No. 198,259
Int. Cl. B23p *19/00, 17/00, 11/02*
U.S. Cl. 29—200 R **3 Claims**



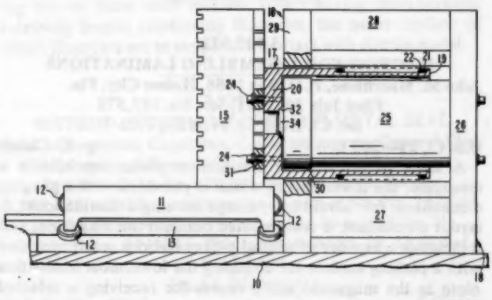
A retaining member, a number of which are fastened to a concrete reinforcing bar causing recesses between said bar and said members, and a method to force a number of other reinforcing bars into said recesses simultaneously, and a tool to carry out this method.

3,737,969

CENTERING DEVICE

Ivan Pejcha, Santa Clara, Calif., assignor to Information Storage Systems, Inc., Cupertino, Calif.

Filed Apr. 19, 1971, Ser. No. 135,008
Int. Cl. H05k *13/00*; **H02k** *15/00*
U.S. Cl. 29—203 P **4 Claims**



This disclosure relates to a centering device specifically applied to a movable coil and a magnet assembly wherein the

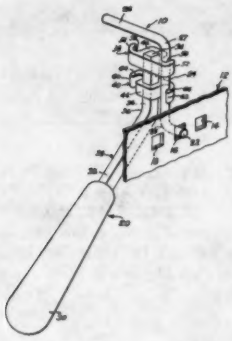
members can be centered relative to each other by the interaction of mating parts on the members when the members are moved into abutting position.

3,737,970

TORSION BAR ADJUSTING TOOL

Harold G. Tracy, 14414 Minock, Detroit, Mich.

Substitute of Ser. No. 660,936, May 22, 1957
Filed Aug. 6, 1971, Ser. No. 169,856
Int. Cl. B23p 19/04
U.S. Cl. 29—225 3 Claims



This torsion bar gripping and adjusting tool has an elongated handle having a jaw-supporting shank and having first and second bar gripping jaws mounted on said shank in spaced relationship thereon. The first jaw has a first bar gripping portion with a first bar engaging recess therein facing in one direction and engageable with one side of the torsion bar whereas the second jaw has a second bar gripping portion with a second bar engaging recess therein facing in the opposite direction from the first bar engaging recess and engageable with the opposite side of the bar from the side thereof engaged by the first recess. The bar gripping portions and the bar engaging recess comprise oppositely-facing hooks which are offset laterally relatively to the shank, with the recesses aligned with one another upon an axis disposed substantially parallel to the axis of the shank. One of the jaws is fixedly mounted on the shank and the other jaw is slidably mounted thereon for sliding motion toward and away from the fixedly mounted jaw. Means consisting of shank receiving bores of non-circular cross-section in both jaws fit the shank of corresponding non-circular cross-section to prevent relative rotation between the jaws and shank.

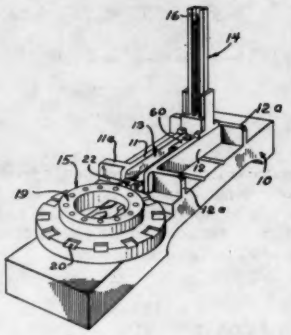
3,737,971

MACHINE FOR ASSEMBLING LAMINATIONS

John M. Macchione, P. O. Box 1386, Haines City, Fla.

Filed July 30, 1971, Ser. No. 167,572
Int. Cl. H05k 13/04; B23q 7/06
U.S. Cl. 29—203 L 13 Claims

A stack of transformer laminations plates are held in a magazine, the lower end of which is provided with a gauging mechanism for admitting passage of single laminations. A layout mechanism is reciprocated beneath the magazine, and it includes a number of spaced picker stations, each provided with a picking surface for engaging the lowermost lamination plate in the magazine and a recess for receiving a selected lamination. In one forward movement, a predetermined number of plates are selected and disposed in laterally spaced relation. On the reverse movement, these plates are gathered into a stack by a stripper member rotatably mounted in front of the gauging mechanism. The stack is seated by the stripper member on an inserter located on the forward end of the



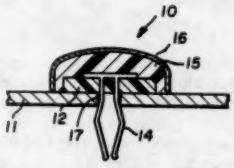
layout mechanism. On the next forward movement of the layout mechanism, a second set of plates is selected from the magazine and the set already picked and stacked is delivered into assembled relation with a coil.

3,737,972

METHOD OF MOUNTING PLASTIC TRIM STRIP

Edward H. Smoot, Holcomb, N.Y., assignor to The Schlegal Manufacturing Company, Rochester, N.Y.

Filed June 21, 1971, Ser. No. 154,738
Int. Cl. B23p 11/02
U.S. Cl. 29—453 6 Claims



A mechanical, spring clip mounting method for plastic trim strips allows plastic to be substituted for metal in trimming automobiles. A base lamina of plastic is formed and punched with holes through which spring clips are inserted, and trim lamina is secured to the base lamina to cover the spring clips which are pressed into holes to fasten the trim strip in place.

3,737,973

METHOD AND DEVICE FOR ASSEMBLING A STOPPER TO A SYRINGE BARREL

Theodore H. Stawski, Union, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Filed Oct. 20, 1970, Ser. No. 82,409
Int. Cl. B23q 17/00
U.S. Cl. 29—407 7 Claims

A device and method for assembling a stopper to a syringe barrel which includes a stopper holding means to hold the stopper as it is being inserted into the open end of the syringe barrel. Simultaneously air escape means on the device permits air within the barrel to escape from the open end of the barrel

and when the stopper has been extended within the barrel to the desired depth, the stopper holding means will release from

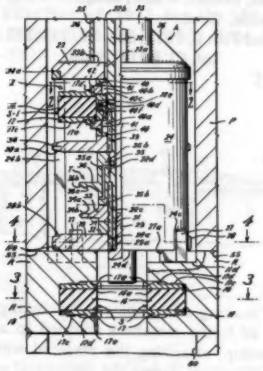
the stopper and may be removed from engagement with the stopper and the syringe barrel without disturbing the location of the stopper within the barrel.

3,737,974

METHOD OF REMOVING AND REPLACING RAM SEALS

James D. Mott, Houston, Tex., assignor to Hydril Company, Houston, Tex.

Filed Mar. 25, 1971, Ser. No. 127,881
Int. Cl. B23p 7/00, 19/02
U.S. Cl. 29—401 **7 Claims**



Retrievable blowout preventer ram seals, and method and apparatus for removing and replacing same without removing the rams or opening the blowout preventers, wherein means are lowered in a well pipe for removing one or both of the retrievable ram seals from the rams by working on the inside of the well pipe, and wherein additional means are provided for inserting from inside of the well pipe one or more of the retrievable ram seals as a replacement for the one or more seals removed, such means being preferably on a single tool but being usable on several separate tools.

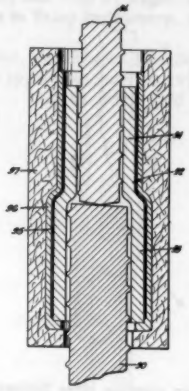
3,737,975

ARRANGEMENT FOR EXPLOSIVELY FORMED CONNECTIONS AND METHOD OF MAKING SUCH CONNECTIONS

Charles N. McKinnon, Jr., 17942 Bascom, Irvine, Calif.

Filed July 15, 1970, Ser. No. 55,154
Int. Cl. B23p 17/00, 19/00
U.S. Cl. 29—421 **34 Claims**

An arrangement (method and apparatus) for attaching together ribbed concrete reinforcing bars or the like in which the bar ends are inserted into a sleeve circumscribed by an explosive, such arrangement including means for confining the explosive and a damping material. The assembly is positioned in a protective shield or casing and, upon detonation,



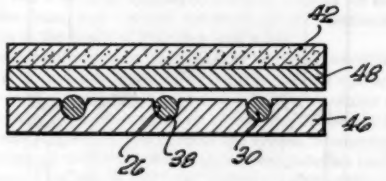
completes the joint by deforming the sleeve inwardly to grip the ribs on the bars. Provision can be made to join bars of unequal diameters or to provide for relative movement between the bars after joining.

3,737,976

METHOD OF FORMING FILAMENT REINFORCED METALLIC SHEETS

Irving Lieberman, Covina, Calif., and Robert M. Gray, Atlanta, Ga., assignors to Whittaker Corporation, Los Angeles, Calif.

Filed Apr. 15, 1971, Ser. No. 71,771
Int. Cl. B23k 21/00
U.S. Cl. 29—470.1 **2 Claims**



Multi-layer metallic sheet composite structures containing fragile reinforcing filaments are prepared by explosively welding two or more such metallic layers having therebetween relatively fragile reinforcing filaments, the outer surface of which filaments are in supportive contact with ductile metal.

3,737,977

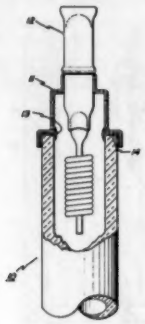
METHOD OF FORMING CERAMIC-METAL SEAL

Paul J. Jorgensen, Cupertino, Calif., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 825,086, Nov. 14, 1968, Pat. No. 3,598,435, which is a continuation-in-part of Ser. No. 749,069, July 31, 1968, which is a continuation-in-part of Ser. No. 500,311, Oct. 21, 1965. This application Oct. 19, 1970, Ser. No. 82,126
Int. Cl. B23k 31/02
U.S. Cl. 29—472.9 **3 Claims**

An improved seal or bond between a refractory metal body and a translucent alumina ceramic body is disclosed wherein

the metal surface to be bonded to the alumina body is comprised of zirconium, either as a metallic coating thereon, diffused therein by "metalliding," as an alloying constituent, or as the major constituent of the metal body. The bond is ef-



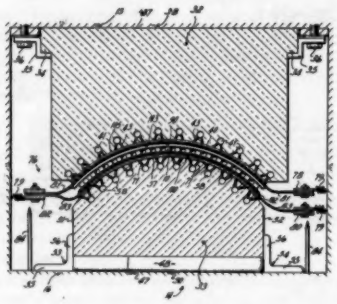
fected by means of an alumina glass between the zirconium present at the surface and the adjoining alumina ceramic surface, at least a portion of the zirconium being oxidized by the molten glass during the formation of the seal.

3,737,978

BRAZING METHOD

Robert R. Rathbun, Middletown, Ohio, assignor to Aeronca, Inc., Middletown, Ohio

Division of Ser. No. 1,234, Jan. 7, 1970, Pat. No. 3,612,387.
This application May 5, 1971, Ser. No. 140,579
Int. Cl. B23k *31/02*
U.S. Cl. 29—472.3 8 Claims



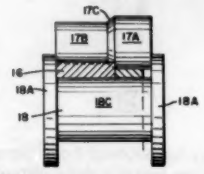
A method and apparatus are disclosed for brazing articles such as honeycomb sandwich structures. The apparatus includes a cold wall box-like housing separable into upper and lower sections. Each section carries a ceramic die member provided with passageways terminating in small ports for conducting a cooling fluid adjacent to the work. The workpiece is heated by electrical resistance heater strips passing above and below the workpiece. Means are provided for evacuating the housing and back-filling it with argon. When the workpiece is brought to brazing temperature, two expandable bags are inflated. One bag raises the lower die section to form a general fit with the upper one. The second bag is in direct contact with the upper face of the workpiece and exerts a uniform pressure normal to its surface. After brazing, the bats are deflated and chilled argon is introduced through the die passages to cool the work. Other features include localized temperature control by electron emission or cooling tubes and vapor removal by means of a cold trap.

3,737,979

METHOD OF MANUFACTURING LONGITUDINALLY WELDED STRIPS OF DIFFERENT THICKNESSES AND WIDTHS

Antone F. Rakich, Waterbury; Luis J. Lozano, Southington, and John A. Nelmes, Waterbury, all of Conn., assignors to Anaconda American Brass Company, Waterbury, Conn.

Filed Aug. 5, 1971, Ser. No. 169,203
Int. Cl. B23k *31/02*
U.S. Cl. 29—480 4 Claims



A composite flat metal strip having portions of different thicknesses is produced by welding together strips of the different thicknesses along their adjacent edges and by rolling both thicknesses of the composite welded strip to a final stepped cross-section.

3,737,980

METHOD OF MANUFACTURING LUGGAGE CASES AND THE LIKE AND PRODUCTS PRODUCED THEREBY

Henry L. Kotkins, Seattle, Wash., assignor to Skyway Luggage Company, Seattle, Wash.

Filed Feb. 8, 1971, Ser. No. 113,192
Int. Cl. B21d *39/00*
U.S. Cl. 29—515 4 Claims

A method of making a luggage case including the steps of forming a pair of frame members adapted to abut in interlocking relationship, attaching the material which, together with the frame members, forms the peripheral surface of the case to said frame members while they are in a substantially linear condition, bending the framework and the material attached thereto to the required shape of the outer periphery and attaching to the resulting peripheral surface the side panels, lining and other necessary accoutrements. The luggage case resulting from the method of construction has no passage for dirt, water and the like to enter the luggage case at the place where the framework is attached.

3,737,981

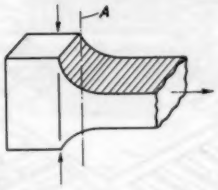
PROCESS OF MANUFACTURING FORGED OR ROLLED ROD STEEL FROM LEDEBURITIC TOOL STEEL

Erwin Plockinger, and Wolfgang Holzgruber, both of Kapfenberg, Austria, assignors to Gebr. Bohler & Co. Aktiengesellschaft, Kapfenberg, Austria

Filed Oct. 12, 1971, Ser. No. 188,014
Claims priority, application Austria, Oct. 15, 1970, A/9297
Int. Cl. B23k *19/00*
U.S. Cl. 29—527.7 5 Claims

A fusible electrode is provided, which consists of ledeburitic tool steel and is suitable for use in a remelting process. Said

electrode is melted. A slab ingot is built up by solidifying the resulting melt in a water-cooled slab ingot mold. Said slab ingot is upset by a succession of forging steps in the direction of the longitudinal axis of said slab ingot to provide a semifinished product. Said semifinished product is subjected



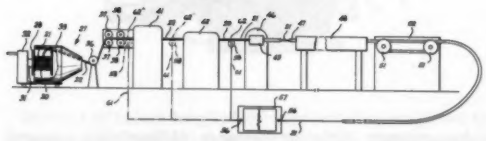
to a stretching deformation to an extent of at least two times, based on the cross-section of said semi-finished product, to form a stretched product having the cross-section desired for said rod. From said stretched product, a rod is obtained which has a fairly homogeneous carbide distribution throughout its cross-section and length.

3,737,982

METHOD OF AND APPARATUS FOR MEASURING THE TEMPERATURE OF A MOVABLE ELONGATED CONDUCTOR

John Charles Calhoun, Atlanta, Ga., and William Malcolm Flegal, Charleston, S.C., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Nov. 15, 1971, Ser. No. 198,514
Int. Cl. B28b *19/00*; **G01k** *7/08, 13/06*; **H01v** *1/04*
U.S. Cl. 29—573 **28 Claims**



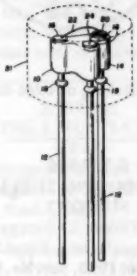
The temperature variation of a movable elongated conductor, for example, a copper wire, may be determined by butt-joining a length of dissimilar conductor, for example, a length of constantan wire, to the wire to form a thermocouple junction between the wires and connecting a potentiometric recording device across a series connection of the formed junction and a reference junction at a known temperature. Several junctions may be incorporated in a wire at spaced predetermined intervals such that one junction at a time may be passed through a process which involves the transfer of thermal energy between the wire and a processing facility, for example, an extruder head in an insulating line wherein a sheath of plastic insulation is applied to the conductor. As long as the temperatures of the remaining junctions are known, they may be utilized collectively as a reference junction to obtain the time variation in the thermoelectrically generated voltages which are directly proportional to the temperature of the junction passing through the process.

3,737,983

AUTOMATED METHOD AND SYSTEM FOR FABRICATING SEMICONDUCTOR DEVICES

Lewie C. King, Dallas; Gerald A. Yearsley, Garland; Anthony L. Adams, Dallas; Marion I. Simmons, Richardson; Eugene G. Altenburger, and Billy P. Yager, both of Dallas, all of Tex., assignors to Texas Instruments, Incorporated, Dallas, Tex.

Division of Ser. No. 837,843, June 30, 1969, Pat. No. 3,618,191. This application June 14, 1971, Ser. No. 153,064
Int. Cl. B01j *17/00*
U.S. Cl. 29—574 **5 Claims**



An automatic method and system for packaging discrete semiconductor devices such as transistors is described. The system includes a chasis for indexing a plurality of chucks past a series of work stations. The work stations include three wire loading stations for loading flat-headed lead wires in the chucks, a glass loading station for placing a glass ring around the necks of the lead wires, a series of heaters for heating the glass rings, a pair of molding stations for molding the heated glass rings around the necks of the lead wires to form a header, an alloy station for placing the semiconductor devices in a predetermined orientation on the head of one of the lead wires, and a series of automatic bonding stations for connecting the base and emitter contacts of the semiconductor devices to the heads of the other lead wires.

The overall system is controlled by a digital computer. Stations are provided for detecting the absence of a lead wire, the absence of a glass ring, or the absence of a transistor device. The system also detects failure of any one of the bonder stations and terminates operation of the system. The computer is programmed to provide shift registers which define each index position of the chasis and logic signals are shifted through the shift register to continually locate any chuck which is defectively loaded so as to prevent the successful completion of a header assembly. The computer then disables each subsequent station as the defectively loaded chuck is positioned at the respective station.

3,737,984

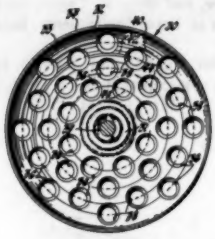
BLENDING DEVICE

Alex J. Pietroski, Madison Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 23,790, March 30, 1970, Pat. No. 3,678,551. This application Feb. 7, 1972, Ser. No. 224,141
Int. Cl. B23d *71/00*; **B26d** *1/00*
U.S. Cl. 29—567 R **2 Claims**

A blending device for soft filler material including a support member with a plurality of continuous cutting edges thereon. One form of the device includes a harder member with a hemispherical portion having a plurality of continuous cutting

edges thereon formed by the intersection of a plurality of openings through the member. The hemispherical portion of



the member minimizes ditching or edge cutting in the surface being worked on.

3,737,985

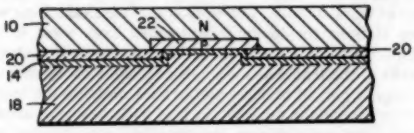
METHOD OF PRODUCING THIN LAYERS ON A SUPPORT

Demir S. Zoroglu, and William L. George, both of Scottsdale, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Oct. 16, 1970, Ser. No. 81,333

Int. Cl. B01j *17/00*

U.S. Cl. 29—578 **3 Claims**



While it is possible to diffuse P impurities into compounds of gallium and arsenic that are useful in producing light emitting PN junctions, at the present state of the art it is not possible to diffuse N type impurities thereinto whereby at the present state of the art thin layers of N type material of gallium and arsenic compounds cannot readily be obtained. The light produced by the PN junction in a light emitting diode is much more greatly absorbed by the P layer than by the N layer, whereby it is advantageous to produce a very thin N type layer in the production of the light emitting PN junctions. A method is disclosed for providing a very thin layer of N type material, the material being a compound of gallium and arsenic that may or may not include other elements that is useful in light emitting diodes.

3,737,986

EXPLOSIVE BONDING OF WORKPIECES

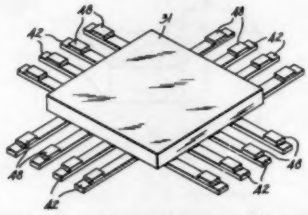
Benjamin Howell Cranston, Trenton, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 68,431, Aug. 31, 1970, which is a continuation-in-part of Ser. No. 6,829, Jan. 29, 1970. This application Nov. 26, 1971, Ser. No. 202,348

Int. Cl. B01j *17/00*; H01l *7/02, 7/16*

U.S. Cl. 29—589 **77 Claims**

First workpieces, for example, beam-leaded integrated circuits, and the like, are bonded to second workpieces, for example, metallized ceramic substrates by first depositing a quantity of primary explosive, such as lead azide, onto each beam lead and then detonating the explosive to explosively bond the integrated circuits to the substrate. In another embodiment of the invention, the explosive bonding force is applied through a buffer sheet of plastic or metallic material which protects the surface of the substrate from contamination and which, in addition, dampens the shock of the explosion. In yet another embodiment of the invention, metal conductive paths are explosively bonded directly to a ceramic or glass substrate to form a "printed circuit pattern." The same techniques are used to manufacture resistors, capacitors, inductors, etc.



3,737,987

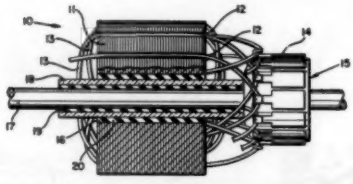
METHOD OF MAKING AN INSULATED ARMATURE

Thaddeus E. Bednarski, Timonium, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Division of Ser. No. 878,825, Nov. 21, 1969, Pat. No. 3,639,789. This application May 26, 1971, Ser. No. 147,141

Int. Cl. H02k *15/00*

U.S. Cl. 29—596 **2 Claims**



An armature including a sleeve of insulating material bonded in place between the armature shaft and the armature laminations. The insulating sleeve may extend under the commutator if desired. A method of providing this armature is also described which comprises holding the laminations, the sleeve and the shaft in their relative positions and injecting a bonding material between the sleeve and the shaft and between the sleeve and the laminations.

3,737,988

METHOD OF BONDING ARMATURE SUB-ASSEMBLIES

Thaddeus E. Bednarski, Timonium, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.

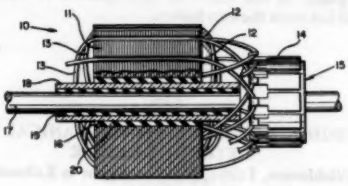
Continuation-in-part of Ser. No. 147,141, May 26, 1971, which is a division of Ser. No. 878,825, Nov. 21, 1969, Pat. No. 3,639,789. This application Aug. 4, 1972, Ser. No. 278,052

Int. Cl. H02k *15/00*

U.S. Cl. 29—596 **2 Claims**

A method of manufacturing an armature of the type including a sleeve of insulating material bonded in place between the

armature shaft and the armature laminations is described. The method comprises positioning the laminations, the sleeve and



the shaft in appropriate relative positions and providing an anaerobic bonding material between the sleeve and the shaft, and between the sleeve and the laminations.

3,737,989

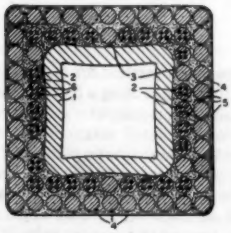
METHOD OF MANUFACTURING COMPOSITE SUPERCONDUCTOR

Norbert Schaetti, Glattbrugg, Switzerland, assignor to Maschinenfabrik Oerlikon, Zurich, Switzerland

Division of Ser. No. 43,992, June 8, 1970, Pat. No. 3,643,001. This application Nov. 19, 1971, Ser. No. 200,554

Int. Cl. H01v *11/00*

U.S. Cl. 29—599 7 Claims



Sections of hollow longitudinal support tubes are joined to form a continuous fluid-tight tube to which superconductor assembly wires are first applied, then, if desired, non-superconductive wires are wrapped therearound with a direction of twist opposite to that of the superconductor wires, the wires being placed closely adjacent each other so that, upon immersion into a melt of good heat-conductive, non-magnetizable material, the fluid material will flow by capillary action in the interstices between the wires to form a composite, encapsulated whole.

3,737,990

METHOD OF MAKING A COIL FOR AN ELECTROMAGNETIC HIGH ENERGY IMPACT APPARATUS

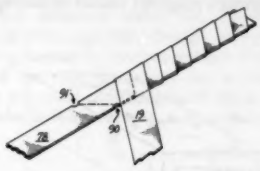
Hendrik P. Schut, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Apr. 12, 1971, Ser. No. 133,090

Int. Cl. H01f *7/06*

U.S. Cl. 29—605 7 Claims

An apparatus utilizing electromagnetic energy for producing high impact forces by means of a ram propelled against a work piece. A specific utilization of the apparatus is in the installation of fasteners such as rivets in structural assemblies. The apparatus described herein is the work center of an elec-



tromagnetic impact tool and comprises the following components: electromagnetic high energy pulse coil, ram means, aerostatic bearing means and connector means.

3,737,991

METHOD OF MAKING A MULTI-CHANNEL MAGNETIC HEAD

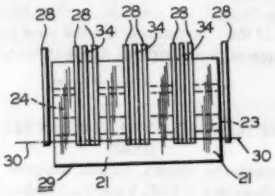
Kenichi Fujimura, Neyagawa-shi, and Takashi Tanaka, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Kadoma, Osaka, Japan

Filed Aug. 11, 1971, Ser. No. 170,875

Claims priority, application Japan, Aug. 18, 1970, 45/72589; Nov. 13, 1970, 45/100572; Nov. 16, 1970, 45/101745; Nov. 16, 1970, 45/101747; Nov. 7, 1970, 45/98580; Mar. 24, 1971, 46/17420; Nov. 12, 1970, 45/9913

Int. Cl. G11b *5/42*; H01f *7/06*

U.S. Cl. 29—603 11 Claims



A method of making a multi-channel magnetic head. Two blocks of magnetic material are provided, each of which has one surface smoothly polished and has one groove in the polished surface. The blocks are joined to each other with the grooved surfaces opposed to each other and a gap material between them and so that the grooves face each other. A conductive rod is inserted into the bore formed by the grooves. Slots perpendicular to and extending across the grooves are cut in the joined blocks and through the rod. Two conductive plates are inserted into each of the slots so that they are in separate electrical contact with the remaining portions of the conductive rod. The slots are filled with adhesive material. The resultant composite body is cut at a plane between the bore defined by the grooves and the bottom of the slots to form a stack of a plurality of single-turn elementary heads separated from each other by the adhesive material.

3,737,992

METHOD OF MANUFACTURING MULTIPLE TRACK, DUAL GAP MAGNETIC HEADS

Richard E. Braun, St. James, and Lionel G. Hopkins, Lake Grove, both of N.Y., assignors to Magnetic Head Corporation, Hauppauge, N.Y.

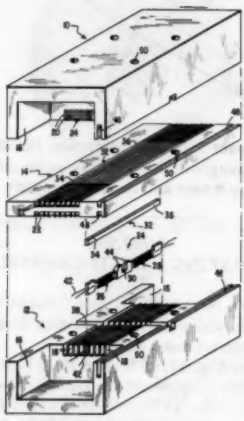
Filed June 9, 1972, Ser. No. 261,214

Int. Cl. G11b *5/42*; H01f *7/06*

U.S. Cl. 29—603 5 Claims

Three sub-assemblies, consisting of an elongate center section having elongate, compound core members assembled with opposite sides thereof and a pair of elongate housing sec-

tions having elongate, compound core members assembled therewith, are joined with the housing assemblies sandwiching the center section assembly therebetween with an opposite end portion of each elongate core member of the center section assembly forming a magnetic circuit, including an air gap,



with a corresponding end portion of an elongate core member assembled with one of the housing sections. Separation of the joined sub-assemblies substantially perpendicular to the longitudinal axes thereof at a position intermediate the opposite end portions of the elongate, compound core members results in the formation of two complete, dual gap head assemblies.

3,737,993

METHOD OF MAKING A MULTI-CHANNEL MAGNETIC HEAD

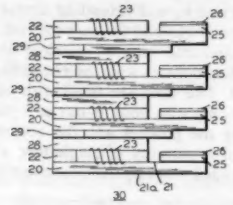
Yukihiro Yanagiuchi, Osaka, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Kadoma, Osaka, Japan

Filed Nov. 18, 1971, Ser. No. 200,078

Claims priority, application Japan, Nov. 27, 1970, 45/105259; Nov. 30, 1970, 45/106528; Dec. 2, 1970, 45/107460; Dec. 2, 1970, 45/107460; Dec. 2, 1970, 45/10746

Int. Cl. G11b *5/42*; H01f *7/06*

U.S. Cl. 29—603 **7 Claims**



A method of making a multi-channel magnetic head. Two magnetic core members having windings wound thereon are joined to each other on the flat surface of a support plate in order to make an elementary head unit. A plurality of elementary head units, separating plates and sheets are stacked so that a separating plate is sandwiched between each elementary head unit and each sheet. The body of stacked elements is cut into two halves in at least one plane which is perpendicular to the flat surfaces of the support plates and which divides each of the magnetic cores and sheets into two parts. A plurality of the cut sheets is taken out of the cut body so as to leave a plurality of slits in the cut body. A plurality of shield plates are inserted into the slits and the two halves are rejoined at the plane of the cut with gap spacers of non-magnetic material between the two halves.

3,737,994

METHOD FOR PRODUCING A MECHANICAL STRESS DETECTING DEVICE

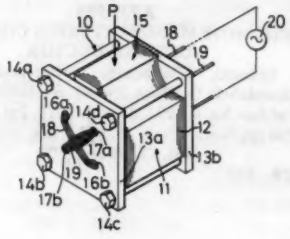
Kazuo Nishimura, Tokyo, Japan, assignor to Kabushiki Kaisha Meidensha, Tokyo, Japan

Division of Ser. No. 89,175, Nov. 13, 1970. This application May 15, 1972, Ser. No. 253,598

Claims priority, application Japan, Dec. 3, 1969, 44/96924; Oct. 14, 1970, 45/90209

Int. Cl. H01f *7/06*

U.S. Cl. 29—606 **3 Claims**



Herein disclosed is a method for manufacturing a mechanical stress detecting device using a block of laminated magnetic plates and a pair of non-magnetic side plates between which the block of the laminated magnetic plates is tightly interposed. The block of the magnetic plates and the side plates attached thereto have formed therein four apertures extending from one of the side plates to the other and symmetrically spaced apart from each other at an angle of about 90°, the apertures being located in a manner to have the phantom lines joining diametrically opposed pairs of the apertures are angled at about 45° to the direction in which a mechanical stress is applied to the block of the laminated magnetic plates. The detecting device is produced by heating the block of the laminated magnetic plates tightened by the side plates to the Curie point with a magnetizing coil passed through one pair of apertures in the block and cooling the block of the laminated plates through a predetermined range of temperature with the magnetizing coil kept energized, whereby a magnetic core having a monoaxial magneto-anisotropy is obtained. The magnetizing coil is then removed and a detecting coil is passed through another pair of apertures in the block.

3,737,995

METHOD FOR THE PRODUCTION OF PLASTIC

Ferdinand Utner, Regensburg, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Nov. 18, 1971, Ser. No. 200,124

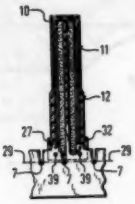
Claims priority, application Germany, Nov. 19, 1970, P 20 56 909.9

Int. Cl. H01f *7/06*

U.S. Cl. 29—605 **8 Claims**

Plastic covered coils which are compact and easily inserted in a circuit board are efficiently and economically produced

by a continuous production method wherein a generally tubular core having a winding thereon is plugged onto a mounting rod portion of a transporting belt and has the coils ends connected to a upper portion of the belt, a coating of plastic is applied over the coil sub-assembly, the upper discontinuous portion of the band is separated from the lower continuous portion, and the contacts formed as required. An enlarged base formed by the plastic coating may contain coil control components.

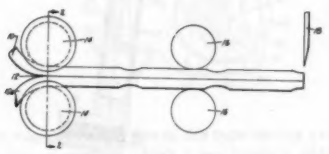


3,737,996

METHOD OF MANUFACTURING THERMOCOUPLES

Donald H. Orts, Middletown, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Filed Apr. 1, 1971, Ser. No. 130,266
Int. Cl. H01c 7/04
U.S. Cl. 29—612 **7 Claims**



The rapid production of a continuous length of parallel wires intermittently welded along the length thereof, for use in apparatus such as thermocouples. The process for this operation comprises the steps of uncoiling two continuous lengths of wire, dissimilar in composition if used for thermocouples, and bringing same together into parallel and intimate contact in a longitudinal direction by means of opposed wheel electrodes, which wheels are circumferentially grooved so as to receive and hold said wires in intimate contact for intermittent welding along the length of said dual wire. To effect a separation of the welded dual wire into one or two individual units per weld, where each unit comprises a length of each said wire joined together at one end thereof by welding, a shear may be provided following the welding to sever the dual wire within the welded section, adjacent the welds, or intermediate the weld locations. This results in not only a system for the rapid production of welded wire such as used in thermocouples, but in an inexpensive and effective method which insures a controlled area junction for the joined wires.

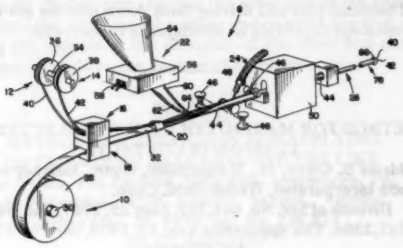
3,737,997

CONTINUOUS MANUFACTURE OF SHIELDED CONDUCTORS

Bayard C. Davis, Lombard, Ill., assignor to Sensor Dynamics, Inc., Addison, Ill.

Filed July 13, 1970, Ser. No. 54,405
Int. Cl. H01b 13/26
U.S. Cl. 29—624 **11 Claims**

A method of making continuous lengths of a shielded electrical conductor having a rigid exterior sheath and at least one conductor element held in place therein and surrounded by finely divided and compacted electrical insulation. A supply of metal strip material is continuously removed from a storage roll, and cleaned and positioned by a guide so that, as the strip is formed into a tube, the tube will surround one or more wires or conductive elements which are simultaneously being removed from a storage roll, cleaned, and positioned within the tube being formed by another portion of the guide. During one stage of the tube formation, the insulating material is cleaned and deposited continuously on the strip material from which the tube is being formed, so that the tube will enclose the insulation, and the insulation will in turn aid in positioning the wire within the tube. After formation of the shielded conductor in this manner, the entire conductor is reduced in diameter to compact further the insulation. The formed lengths may thereafter be cut to desired lengths for use as shielded cable, electrical resistance heating elements or thermocouples for temperature detection.



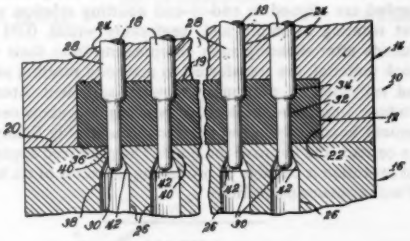
Interior tube cleanliness is critical in shielded conductors; the method of the invention enables cleaning to be made more effective and consistent, and to be greatly simplified, and also permits high quality shielded conductors of virtually unlimited length to be made at low cost.

3,737,998

METHOD AND APPARATUS FOR MAKING ELECTRICAL CONNECTOR ASSEMBLIES

Lucid Lincoln Byrd, Mount Prospect, Ill., assignor to Carter Precision Electric Company, Skokie, Ill.

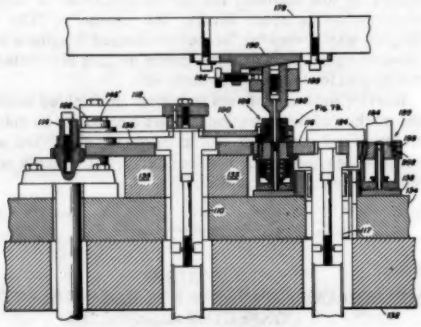
Filed Jan. 21, 1972, Ser. No. 219,622
Int. Cl. H05k 13/04, 3/28
U.S. Cl. 29—627 **22 Claims**



An insulative block is molded having a plurality of pin receiving openings with wide diameter head portions, where the cross sectional size of terminal pins is less than these head portions but greater than the remaining portion of the

openings. A terminal pin insert machine is used to assemble the terminal pins comprising a base plate having a plurality of vertical openings formed downwardly from its upper surface, rig means for holding and aligning said terminal block on said base plate such that said pin receiving openings are in direct alignment with said vertical openings, and a guide plate assembly having a plurality of vertical passageways between its upper and lower surface, which is supported directly above the terminal block with its vertical passageways in direct alignment with the pin receiving openings. The vertical passageways of the guide plate assembly have an intermediate portion of identical cross sectional shape and slightly larger size than said terminal pins to hold said terminal pins in a perpendicular relation to said terminal block when in the loading position. Press means are provided for engaging the tops of said terminal pins and driving them down into the pin receiving openings to provide an interference fit therewith.

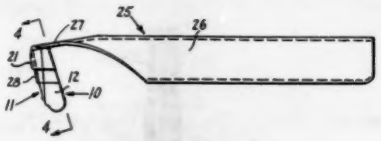
3,737,999
METHOD FOR MAKING COLD BONDED ELECTRICAL COMPOSITE CONTACTS
Childress B. Gwyn, Jr., Wethersfield, Conn., assignor to Contacts Incorporated, Wethersfield, Conn.
Division of Ser. No. 641,342, May 25, 1967, Pat. No. 3,547,3304. This application Aug. 12, 1970, Ser. No. 63,333
Int. Cl. H01r
U.S. Cl. 29—630 **10 Claims**



This invention relates to a novel method for forming composite electrical contact elements and, more particularly, to a method for the manufacture of integrally bonded contacts, each comprising a contact working face and a contact body portion, in a rotating mechanism. The two components to be bonded are aligned in end-to-end abutting relation within a first rotating assembly and, preferably within 0.01 to 0.5 seconds after shearing such components from their wire or stock material, are transferred to a second rotating assembly and subjected to a forming blow of sufficient intensity to produce interfacial molecular bonding therebetween. Subsequent heading blows in the second assembly finally shape the contact and improve the bond. The preferred apparatus of the invention is capable of producing in excess of six hundred of such contacts per minute.

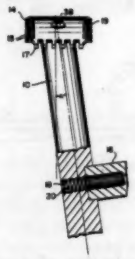
3,738,000
DISPOSABLE RAZOR
Alexander Samko, 1647 Rodman St., Hollywood, Fla.
Filed July 29, 1971, Ser. No. 167,166
Int. Cl. B26b *21/06*
U.S. Cl. 30—32 **6 Claims**

A disposable razor in which the razor blade is secured with cement into a two-piece head engaging the blade on opposite sides and including alignment pins which extend through the



blade. A guard is integrally formed on one of the two pieces of the head and a handle is secured to the other piece.

3,738,001
SCRAPING OR SCORING TOOL
Daniel F. Roche, Meriden, Conn., assignor to Carl Salka, Meriden, Conn., a part interest
Filed Jan. 21, 1971, Ser. No. 108,283
Int. Cl. B26b *3/00*
U.S. Cl. 30—171 **10 Claims**

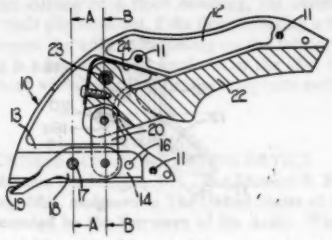


A scraping or scoring tool primarily for scoring the surface of wallpaper on walls to be redecorated, so that moisture can penetrate below the surface of the paper when sprayed or steamed on stripping it from the wall. The tool is provided with a curved blade which is mounted transversely at one end of a handle and has teeth along its working edge which lie in a common plane. The handle has a mounting portion which extends at an obtuse angle to the cylindrical axis of the blade so that by tilting the blade with respect to the surface of the wall as the blade is pressed against the wall and drawn across it, the amount of contact of the toothed working edge can be decreased, thereby concentrating the pressure applied to the surface being scored along a smaller portion of the working edge and facilitating the scoring of areas where it is more difficult to penetrate the paint.

3,738,002
CUTTING DEVICES.
Thomas Robb Coughtrie, Bryn Collen, Llanover, Abergavenny, England
Filed Mar. 23, 1971, Ser. No. 127,326
Int. Cl. B26b *13/26*
U.S. Cl. 30—251 **5 Claims**

A cutting device for sheet material includes a first blade

portion which defines a pair of opposed spaced cutting edges, a second blade portion movable between said cutting edges



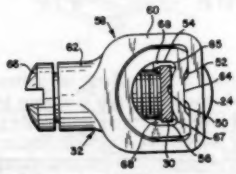
and operable upon such movement to shear sheet material disposed between the blade portions.

3,738,003

BLADE MOUNTING ASSEMBLY FOR JIG SAW

William H. Dietzen, Fayetteville, N.C.; William R. Lessig, III; Leonard U. Alsruhe, both of Towson, Md., and Howard I. Younginer, Fayetteville, N.C., assignors to Black and Decker Manufacturing Company, Towson, Md.

Filed Mar. 13, 1972, Ser. No. 233,921
Int. Cl. B27b *19/08*; B23b *31/12*
U.S. Cl. 30—392 **8 Claims**



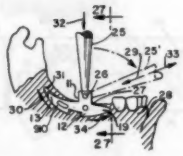
In a portable electric jig saw of the type having a reciprocating power driven shaft to which a saw blade is adapted to be secured and wherein the shaft is of hollow tubular construction having its open free end formed to provide an interiorly positioned flat surface of substantial axial length and against which the saw blade is clamped so that the blade will be positioned in substantial alignment with the axis of the tubular shaft, the latter being provided with inwardly directed and oppositely disposed lanced portions constituting positive stops for limiting axial entry of the blade into the shaft and for confining the inner blade end against lateral movement, the arrangement being such that the blade may be easily and quickly assembled to the shaft to provide a secure and rigid mounting.

3,738,004

BONE IMPLANT AND METHOD OF IMPLANTATION

Alfred E. Edelman, 2723 Federal Street, Camden, N.J.

Filed Mar. 1, 1971, Ser. No. 119,515
Int. Cl. A61c *13/00*
U.S. Cl. 32—10 A **24 Claims**



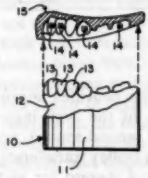
A bone implant having a thin elongated, flat, arcuate blade portion which is adapted to be implanted in a bone so as to avoid unviolatable physiological landmarks having at least one integral neck portion projecting from the blade portion and lying within substantially the same plane as the blade portion but adapted to extend out of the bone when the blade portion is implanted and to which various attachments may be secured. The blade portion has at least one end remote from the neck portion which end is sharpened and is adapted to incise the bone upon the application of a force to the neck portion which force has a component acting in the direction of the one end. The implant is implanted by first cutting a starting slot of a width approximate the thickness of the implant and of a length substantially less than the length of the implant, positioning the implant in the slot with the one sharpened end against one end of the slot, forcing the implant in the direction of the one end so that the one end incises the bone in an arcuate path, forcing the other end of the implant down into the slot when the other end overlies the slot, and forcing the implant in the direction of the other end until a locking projection on the implant engages uncut bone.

3,738,005

METHOD AND APPARATUS FOR APPLYING ORTHODONTIC BRACKETS AND THE LIKE

Morton Cohen, Fox Pavilion, Suite 604, Jenkintown, Pa., and Elliott Silverman, 4829 Atlantic Avenue, Ventnor, N.J.

Filed Mar. 22, 1972, Ser. No. 236,821
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 B **10 Claims**



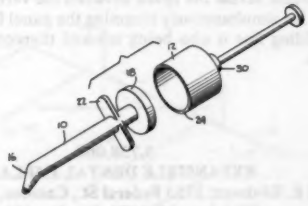
An orthodontic method and apparatus wherein a dental cast of a patient has detachably applied thereto at locations selected by the orthodontist a plurality of brackets, and the like, and a positioner is provided which captures the brackets in their proper position and transfers the brackets so positioned to the patient's teeth for securement thereto.

3,738,006

DENTAL IMPRESSION MATERIAL INJECTING SYRINGE

Oscar Lopez, Cliffside Park, and Juan C. Valdes, Union City, both of N.J., assignors to Oscar Lopez, Cliffside Park, N.J.

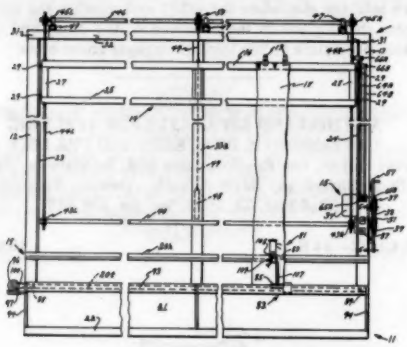
Filed June 23, 1972, Ser. No. 265,431
Int. Cl. A61c *5/04*
U.S. Cl. 32—17 **6 Claims**



A dental syringe for elastic impression material is provided which comprises a nozzle section and plunger section. The

plunger section includes a mixing chamber adapted to receive the nozzle section. When the two sections are coupled, the impression material may be extruded through the nozzle.

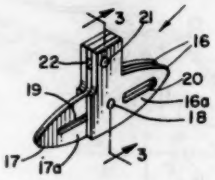
3,738,007
DRAPERY MANUFACTURING DEVICE
Michael E. Tuskos, 2507 Saratoga Drive, Louisville, Ky.
Filed Jan. 28, 1972, Ser. No. 221,528
Int. Cl. B43l *13/00*
U.S. Cl. 33—18 R 10 Claims



The present invention provides improvement in a drapery manufacturing device of the type including: an upstanding frame having first and second spaced, vertical plane defining, parallel guide tracks; a trolley transversely spanning the tracks and movably connected thereto for vertical movement with respect to the frame and including a transverse member; means on the transverse member of the trolley to grasp an edge of a panel to be formed into a drapery to hold the panel in a vertically extending plane on upward movement of the trolley with respect to the frame; drive means to move the trolley vertically with respect to the frame; and reference means defining a horizontal reference plane adjacent the lower end of the frame. Basically, the improvement provided by the present invention comprises combining with such a device marker means located adjacent to the lower end of its frame for movement relative to its reference means to mark a horizontal line on the drapery panel such that the panel can be subsequently removed from the device and then creased by means located remote from the device. In accordance with other aspects of the present invention, such a device is preferably additionally improved by further combining the marker means with cutting means mounted therewith on carriage means for horizontal movement relative to the lower end of its frame across the space between the vertical frame guide tracks for simultaneously trimming the panel lower edge while the folding line is also being marked thereon by the marker means.

3,738,008
EXPANSIBLE DENTAL IMPLANT
Alfred E. Edelman, 2723 Federal St., Camden, N.J.
Filed June 30, 1971, Ser. No. 158,397
Int. Cl. A61c *13/00*
U.S. Cl. 32—10 A 16 Claims

A dental implant has a dental support portion and an implant portion which is adapted to be embedded in the jaw bone. The implant consists of at least two members, at least one of which is movable relative to the other so that in an initial position the implant portion has a minimum effective

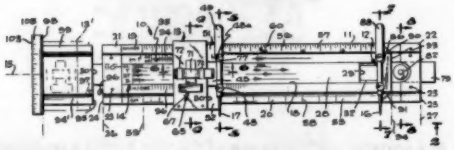


width, but in an expanded position the width of the implant portion is substantially increased for anchorage thereof in the jaw bone.

ERRATUM

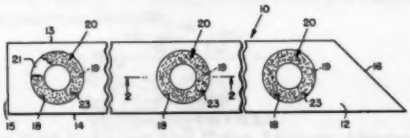
For Class 33—18 see:
Patent No. 3,738,007

3,738,009
RULE AND COMPASS DEVICE
Edward A. Kuwada, 1053 South Kingsley Drive, Los Angeles, Calif.
Filed Feb. 16, 1971, Ser. No. 115,541
Int. Cl. B43l *9/04*
U.S. Cl. 33—27 C 16 Claims



A drafting and calculating instrument including a rule body carrying compass points which are relatively adjustable to draw and/or measure circles of different sizes, and having also a slide rule element connected movably to the body, with slide rule scales formed thereon and on the body for effecting a calculation. An indicator having a slide rule hairline for reading the scales may also be mounted slidably to the body, and desirably carries one of the compass points.

3,738,010
STRAIGHT EDGE WITH NON-SLIP INSERTS
William E. Carder, Fairport, N.Y., assignor to Carder Industries, Inc., Rochester, N.Y.
Filed Aug. 7, 1972, Ser. No. 278,533
Int. Cl. B43l *7/00*; G01b *3/04*
U.S. Cl. 33—107 6 Claims



A flat, metal straight edge has a plurality of annular inserts releasably mounted, as by a press fit, in annular recesses formed in one side of the straight edge. Each insert has on one

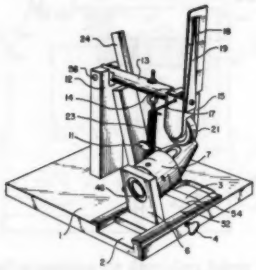
end a resilient, rubber-like surface, and on its opposite end a pile surface of the type sold, for example, under the trademark "Velcro." When the straight edge is used to guide a cutting tool during the cutting of a floor covering, the inserts are disposed with their pile sides out, if the floor covering is fabric, thereby to prevent the edge from sliding on the fabric. If the floor covering is a hard-surfaced linoleum or the like, the inserts are mounted with their rubber ends facing outwardly.

3,738,011

THICKNESS-SCRATCH TESTING DEVICE

Elizabeth Anderson, Washington, D.C., and Richard E. Brown, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 23, 1971, Ser. No. 174,079
Int. Cl. G01b *5/06*
U.S. Cl. 33—169 F **10 Claims**



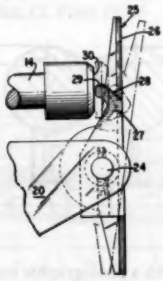
A machine for testing the thickness of a coating on an object having a curved surface at one or more predetermined locations, comprising means to support the object with the coating in a predetermined position, means for supporting a scratch film gage comprising a disc having an extended axial thickness and a circular saw mounted eccentrically of the disc with the teeth of the saw extending at different depths from the edge of the disc, said means allowing the position of the gage to be adjusted to expose different depths of the saw teeth against the surface, means to adjust the position of the disc to permit the edge to engage the curved surface of the object, means to force the gage against the surface with a predetermined force, and means to relatively rotate the curved surface and the gage about the axis of the surface in a predetermined path.

3,738,012

GAUGE FOR MEASURING ANGLES

Alden O. Sherman, 85 Weston Road, Weston, Conn.

Filed Jan. 26, 1971, Ser. No. 109,797
Int. Cl. G01b *5/24*
U.S. Cl. 33—172 B **3 Claims**



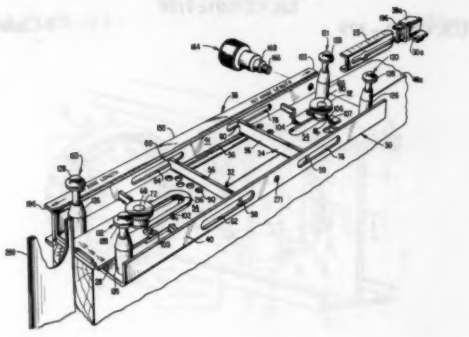
An attachment is mounted on the support of a dial indicator having a reciprocable actuating stem, and a measuring blade is pivotably mounted on a shaft in the attachment. An actuating arm is mounted on the shaft and has an inwardly curved portion which contacts the stem of the dial indicator so as to actuate the dial indicator in a linear response with respect to the angle indicated by the measuring blade.

3,738,013

HINGE BUTT TEMPLATE ASSEMBLY

Edward G. Gregory, Reston, Va., assignor to Rockwell Manufacturing Company, Pittsburgh, Pa.

Filed Aug. 20, 1970, Ser. No. 65,444
Int. Cl. B27g *17/08*
U.S. Cl. 33—197 **32 Claims**



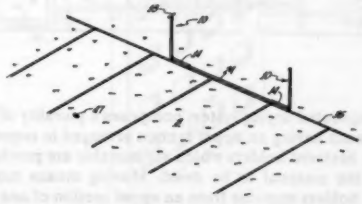
A hinge butt template assembly having a plurality of template sections which are each formed with an adjustable routing opening and which are interconnected by adjustable spacer members to locate hinge butt recesses in door edges and jambs. Each template section comprises a frame defining the routing opening and a pair of hinge size plates adjustably mounted in opposed relation on the frame for selectively varying the size of the opening. A guide member fixed to one side of each frame telescopically and adjustably receives one end of an associated spacer member for spacing the routing openings. Special scales are provided for adjusting the assembly in accordance with the hinge size, door height and location of the top hinge from the door top. The template sections are interchangeable so that they may be assembled in any selected order. This invention is also directed to a special end gage feature for establishing the door top to jamb clearance as well as the spacing of the top hinge from the door top and also to a hinge butt gage which is utilized to transfer locations of preformed jamb butts to a door to be routed.

3,738,014

FOOTBALL SIGHTING AND MEASURING DEVICE

Fred C. Sproul, Sr., 12227 Ranch House Road, San Diego, Calif.

Filed Oct. 18, 1971, Ser. No. 190,229
Int. Cl. G01c *5/00*
U.S. Cl. 33—289 **13 Claims**



A highly accurate football sighting and yardage measuring device for determining the field position of a football that

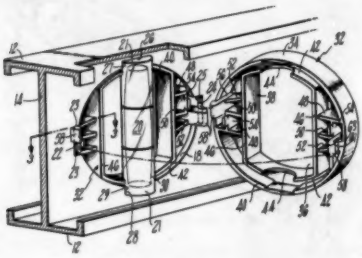
eliminates the need for the traditional "chain gang," and effects substantial time savings by comparison. Yardage marker poles are positioned with the aid of attached elongate feet and a sighting scope, and provision is made for a ground-level metal track to ensure proper alignment of both the sighting scope and the marker poles relative to the sidelines and yardage lines of the playing field.

3,738,015

SNAP-IN VIAL RETAINERS

Maarten C. De Jong, Canton, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed May 11, 1970, Ser. No. 36,355
Int. Cl. G01c *9/24*
U.S. Cl. 33—379 7 Claims



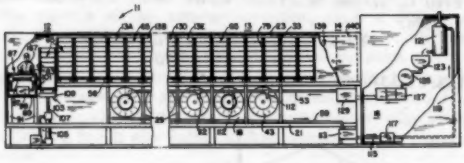
A level having a cylindrical vial having a barrel-shaped bubble cavity is positioned in a circular aperture in the web of a level frame with its axis coincident with the central plane of the web and is retained therein by a pair of identical retainer caps snap-fitted onto the frame web. The retainer caps are each provided with a pair of hooks which engage the edge of a pair of notches of the aperture, and each of the retainer caps provides a reinforcing wall engaging the hooks of the other retainer cap to reinforce the hooks and lock them against inadvertent disassembly.

3,738,016

SEQUENTIAL DRYING SYSTEM

Thomas Margittai, State College, Pa., assignor to Seymour C. Yater, Westchester County, N.Y., a part interest

Filed Aug. 20, 1970, Ser. No. 65,400
Int. Cl. F26b *5/06*
U.S. Cl. 34—92 19 Claims



The sequential drying system comprises a plurality of drying stations each having an upper section arranged in sequence in a tunnel. Material holders which are movable are provided for holding the material to be dried. Moving means move the material holders stepwise from an upper section of one drying station to the upper section of the next drying station through the tunnel. A separate lower section is provided for each drying station for moisture collecting means. Separating means are provided for separating the upper section of the drying stations from each other in the tunnel during the drying intervals between movements of the material holders. The separating means preferably is a vertical panel mounted at one end of a material holder so that it moves with the material holder. The atmosphere in each drying station is recirculated between its upper and lower sections in a closed path. The sequential drying system is especially useful for freeze drying since different temperatures below freezing can be maintained in different drying stations.

3,738,017

YARN HEATING APPARATUS

Josef Raschle, 9606 Buetschwil, Switzerland, assignor to Heberlein & Co. AG., Wattwil, Switzerland

Filed May 28, 1971, Ser. No. 147,855
Claims priority, application Switzerland, Jan. 6, 1971, 102/71
Int. Cl. F26b *13/00*
U.S. Cl. 34—154 8 Claims

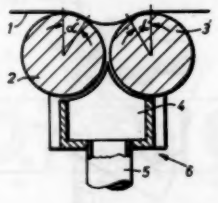
Apparatus for continuous heating of linearly advancing textile yarns by means of a tube sealed at its ends in an enclosure containing a heated fluid medium, the tube having certain physical characteristics to provide a substantially constant wall temperature.

3,738,018

DRYING ARRANGEMENT ON MACHINES FOR COATING SUPPORTING WEBS, MORE ESPECIALLY WITH PHOTOGRAPHIC EMULSIONS

Peter Herzhoff; Hans Gref; Wolfgang Schweicher; Max Heidenreich, and Hans Frenken, all of Leverkusen, Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 861,412, Sept. 26, 1969, abandoned. This application Apr. 5, 1972, Ser. No. 241,223
Int. Cl. F26b *13/00*
U.S. Cl. 34—155 4 Claims



A web coated with a photographic emulsion is supported for drying in a blast of hot air on spaced sets of two-roll hollow suction devices. A suction box having an arcuately pointed section disposed closely adjacent and between the peripheries

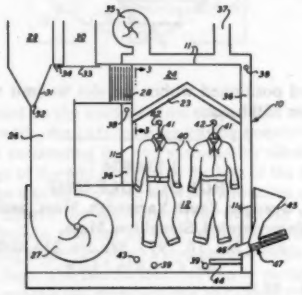
of the rollers on the side opposite the web lowers the pressure between the web and the rollers to increase the force and area of rotation-inducing contact between the web and the rollers and to firmly guide and retain the web on the rollers irregardless of its orientation. This minimizes the number of rollers needed to support the web to increase the area of contact with the hot air and facilitating drying.

3,738,019

DURABLE PRESS METHOD AND APPARATUS

John H. Forg, and George L. Payet, both of Cincinnati, Ohio, assignors to McGraw-Edison Company, Elgin, Ill.

Filed Sept. 13, 1971, Ser. No. 179,781
Int. Cl. F26b *19/00*
U.S. Cl. 34—210 **5 Claims**



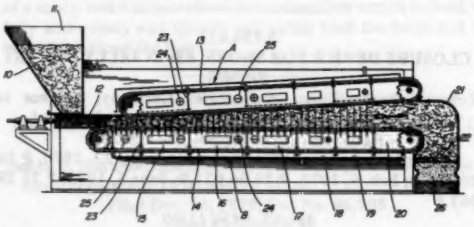
A method and apparatus for providing fabric articles with a durable press on a commercial scale comprises an elongate treating chamber with loading and unloading doors at the ends and with a circulating conduit leading from the bottom of the chamber to an overhead manifold separated from the chamber by a specially slotted ceiling. The conduit includes a blower, exhaust and air inlet ducts with dampers for either exhaust circulation or closed-circuit circulation, and a heat exchanger. Opening into the chamber are headers for injecting steam and sulphur dioxide gas, and a device for feeding formaldehyde to be vaporized into formaldehyde gas. Cool air and water spray are injected into hollow walls of the chamber to cool the same to room temperature after each treating cycle. A step in each treating cycle after the steam is cut off comprises an exhaust heating to rid the articles of free chemicals and steam and a closed-circuit heating to raise the temperature to at least 250°F.

3,738,020

PROCESS FOR EXPANDING POLYSTYRENE

Daniel Hanton, La Neuville Roy (Oise), France, assignor to Compagnie de Saint-Gobain, Neuilly-sur-Seine, France

Division of Ser. No. 542,363, April 13, 1966, Pat. No. 3,598,769. This application Sept. 8, 1970, Ser. No. 69,906
Claims priority, application France, Apr. 14, 1965, 6513184
Int. Cl. F26b *19/00*
U.S. Cl. 34—217 **7 Claims**



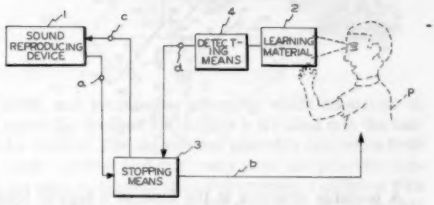
The present invention relates to expanded or blown polystyrene adapted for making articles such as blocks, slabs and shaped pieces and particularly to an improved process for expanding the granules of polystyrene preparatory to the manufacture of articles therefrom.

3,738,021

SYSTEM FOR SYNCHRONIZING SOUNDS WITH LEARNING MATERIALS

Tetsuo Hino; Takao Orita; Isao Kozu; Kiyoji Fujisawa; Akio Nishiyama, and Katsutoshi Nishimura, all of Osaka-fu, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed Oct. 15, 1970, Ser. No. 80,918
Claims priority, application Japan, Oct. 20, 1969, 44/84390
Int. Cl. G09b *5/06*
U.S. Cl. 35—8 A **5 Claims**



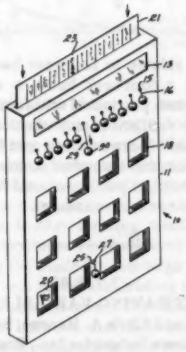
A system for synchronizing sounds with learning materials has a sound reproducing device, learning materials, stopping means and detecting means. The sound reproducing device is stopped by means of the stopping means and is started again by the stopping means which is released from the stopped position in response to output signals of the detecting means generated by detecting a change of the next part of the learning materials.

3,738,022

MULTI-WINDOW TEACHING DEVICE

Bernard N. Kushner, 370 Central Park Avenue, Scarsdale, N.Y.

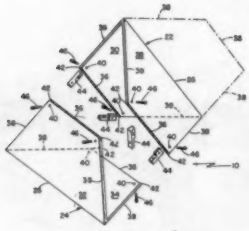
Filed Aug. 5, 1971, Ser. No. 169,445
Int. Cl. G09b *3/02*
U.S. Cl. 35—9 R **8 Claims**



A teaching device having multiple windows through which symbols are displayed, a display of identification words or

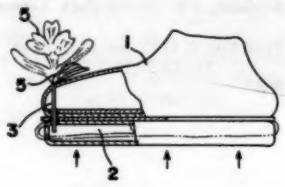
marks related to individual ones of the symbols, and an actuating device for selecting a desired identification word. Moving the actuating device closes the windows in front of the unrelated symbols.

3,738,023
SPLIT TETRAHEDRON WITH OPENINGS
Miriam Sajkovic, 101 College Street, South Hadley, Mass.
Filed Jan. 31, 1972, Ser. No. 221,945
Int. Cl. A63h *33/04*
U.S. Cl. 35—72 10 Claims



A portable structure in the form of a regular tetrahedron having an opening in each of at least three sides thereof and comprising four side panels.

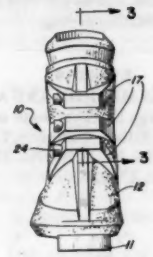
3,738,024
FOOTWEAR HAVING AN ACTIVE ORNAMENT
Shinzaburo Matsuda, 15-6 Imado 2-chome, Taito-ku, Tokyo, Japan
Filed June 8, 1972, Ser. No. 260,802
Claims priority, application Japan, July 15, 1971, 46/62197
Int. Cl. A43b *13/20*
U.S. Cl. 36—2.5 R 6 Claims



This invention relates to footwear having an active ornament comprising a footwear body, a sealed hollow space formed in the bottom portion of said footwear body, an active ornament having resilience and elasticity provided on the upper portion of said footwear body and formed therein with a sealed hollow space, and a conduit connecting said sealed hollow space in the bottom portion of said footwear body to said sealed hollow space in said ornament.

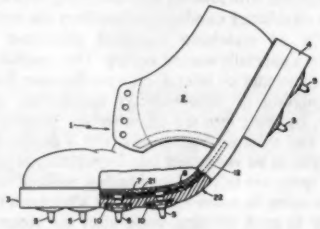
3,738,025
SKI BOOT HAVING VARIABLE STIFFNESS
Alden B. Hanson, and Chris A. Hanson, both of Boulder, Colo., assignors to Hanson Industries Inc., Boulder, Colo.
Filed July 31, 1972, Ser. No. 276,561
Int. Cl. A43b
U.S. Cl. 36—2.5 AL 7 Claims

A ski boot having variable stiffness is provided with a transverse slot in ankle portion which narrows in response to forward lean pressure. Stiffness of boot is controlled by rotating



an oval rod positioned within the slot to limit the extent of deformation of the slot.

3,738,026
SHOE OUTSOLE UNIT
Edward H. Granger, South Yarmouth, Mass., assignor to F. C. Phillips Incorporated, Stoughton, Mass.
Filed Jan. 10, 1972, Ser. No. 216,480
Int. Cl. A43b *23/28*
U.S. Cl. 36—59 R 7 Claims

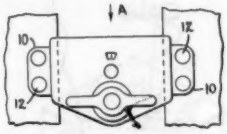


A golf shoe outsole unit consisting of a moldable elastomer, such as P.V.C. or polyurethane or the like having an elongation restraining strip bonded to the upper surface of the outsole extending across a major portion of the outsole at its line of maximum flexure and extending for a substantial distance on both sides of that line. A spike anchor plate is mounted on top of the strip with golf shoe spikes extending from the lower side of the plate, through the strip and the elastomer and out beyond the lower surface of the outsole. The spikes are provided with perforated flanges sealed into the body of the elastomer.

3,738,027
CLOSURE DEVICE FOR SHOES, ESPECIALLY FOR SKI SHOES
Robert Schoch, Singen, Hohentwiel, Germany, assignor to Weimann Aktiengesellschaft, Schaffhausen, Switzerland
Filed Sept. 27, 1971, Ser. No. 184,108
Claims priority, application Germany, Sept. 23, 1970, P 20 46 890.0; Feb. 9, 1971, P 21 06 021.9; June 5, 1971, P 21 28 061.5
Int. Cl. A43b *11/00*
U.S. Cl. 36—50 16 Claims

In a shoe having a pair of closure flaps, a closure device comprising a pair of pull members coupled each to one of the

closure flaps at one end thereof, a central member comprising a rotatably mounted disc at least partially formed as a maltese cross having leg portions with recesses formed between adjacent leg portions and groove means formed on the leg portions, a driving member disposed adjacent the disc and having pins formed thereon, the pins during rotation of the driving member engaging a predetermined one of the groove means, a cam member on the driving member having convexly shaped end portions for engagement with a predetermined one of the



recesses formed on the maltese cross shaped disc and forming a latch therewith, the cam member having concavely shaped side surfaces connecting the end surfaces for allowing unimpeded passage of the end portions of the legs of the disc during rotation of the disc by the pins, whereby a rotation of the driving element causes the associated pins entering the groove means and thereby rotating the disc, and as a result, the pull members being displaced along a straight line closing or opening the shoe flaps. The central member can be mounted on the shoe tongue and the pull members can be cables.

3,738,028

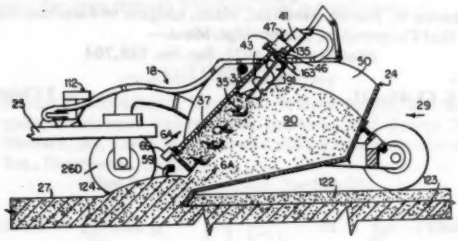
EARTH MOVING APPARATUSES AND PROCESS

Robert L. Reinhardt, P.O. Box 2451, Lubbock, Tex.

Filed May 30, 1972, Ser. No. 257,638

Int. Cl. B60p *1/00*

U.S. Cl. 37—4 **6 Claims**



In earth moving apparatuses dual screw conveyors are resiliently spaced from and supported by a hood thereover which hood is movably mounted at its front end in the mouth of a scoop and transport bowl to accomodate surges in feed, to fully and evenly and quietly and safely load the bowl and to smoothly unload the bowl.

3,738,029

DREDGING HEAD WITH PIVOTALLY MOUNTED MUD SHIELD

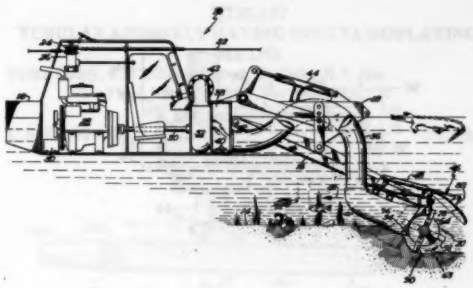
James D. Harmon, Minneapolis, Minn., assignor to Inland Service Corporation, Minneapolis, Minn.

Filed Dec. 10, 1970, Ser. No. 96,705

Int. Cl. E02f *3/92*

U.S. Cl. 37—66 **11 Claims**

A dredging head with a pivotally mounted mud shield and cooperating intake assembly. A head located at the end of a dredge boom has digging and conveying screw augers attached to a rotating shaft to loosen material such as mud, silt, and weeds from the bottom of a body of water and convey it toward an intake assembly which includes a suction intake conduit, a rotor, a stationary anvil, and an arcuate bar assembly. The mud shield confines material near the augers so the material can be conveyed by the augers to the rotor, sta-



tionary anvil, and arcuate bar assembly which cooperate to cut and shred the dredged material as it is pulled into the suction intake conduit. The arcuate bar assembly reinforces both suction intake conduit and stationary anvil and provides support for the rotor to prevent shaft deformation if collision with an underwater obstruction flexes the shaft against the arcuate bar assembly.

3,738,030

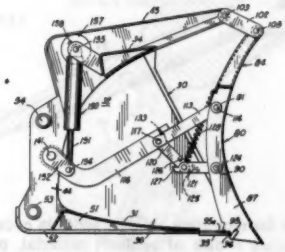
COMBINATION BULLDOZER BLADE AND BUCKET

Donald Richard Olinger, Cedartown, Ga., assignor to Rome Industries, Inc., Cedartown, Ga.

Filed Nov. 23, 1971, Ser. No. 201,354

Int. Cl. E02f *3/76*

U.S. Cl. 37—117.5 **15 Claims**



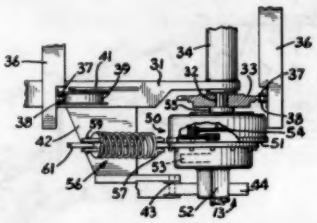
A combination bulldozer blade and bucket unit including means defining bucket means having a bulldozer blade supported thereon for movement from a first bucket forming position to a second bulldozer operation position. The bulldozer blade is operable as an ejector for removing material contained in the bucket means in response to movement of the blade from the first bucket forming position to the second bulldozer operating position. The bulldozer blade is supported on the unit whereby the blade bottom edge will be moved to a position in front of and below the leading edge of the bucket means and includes control means for effecting an automatic latching engagement between the blade and the leading edge of the bucket means in response to movement of the blade to the bulldozer operating position whereby the maximum forces developed against the blade in a bulldozing operation will be transmitted to the bucket means rather than to the blade linkage support means.

3,738,031

RESILIENTLY MOUNTED ELEVATOR DRIVE HOUSING

Walter E. Lott, Washington, Ill., assignor to Westinghouse Air Brake Company, Pittsburgh, Pa.

Filed Jan. 21, 1971, Ser. No. 108,307
Int. Cl. A01b 5/06; B65g 65/06
U.S. Cl. 37—8 1 Claim



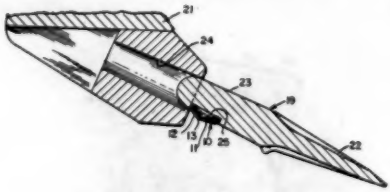
A drive for an elevator in an earthmoving machine which includes an hydraulic motor, flywheel and reduction gear train mounted in a separate housing which is pivoted for rocking movement about the elevator drive shaft and which includes a spring between the housing and the frame of the vehicle to permit limited rocking in the face of reaction torque when shock loads are encountered by the elevator.

3,738,032

DIGGER TOOTH RETAINER

Kenneth M. White, Calgary, Alberta, Canada, assignor to Western Rock Bit Company Limited, Alberta, Canada

Filed Sept. 29, 1970, Ser. No. 76,434
Int. Cl. E02f 9/28
U.S. Cl. 37—142 A 4 Claims



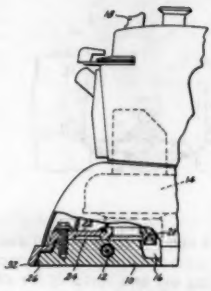
A retainer for mounting a digger tooth in excavating equipment comprises a disk of resilient material, plastic, polyurethane or rubber for example, which has a convexly shaped upper side and an underside formed with a concave recess. The digger tooth has a shank portion by means of which it is mounted in an opening of a tooth mounting pocket in an excavating machine, the tooth being supported by inter-engagement of mating surfaces on the shank and the pocket opening. The retainer is received in a shallow circular recess in a surface of one of these members and is engaged against the mating surface in the other member, the convexly shaped upper portion of the retainer being displaced resiliently downwards by this engagement, and the material thus displaced filling recess on the underside of the retainer. When mounted the retainer presses in opposite directions against the tooth shank and the pocket and acts to secure the tooth in its mounting. To facilitate insertion of the tooth shank in its mounting the upper side of the retainer is defined by two sloping surfaces, the thickness of material beneath one of the surfaces being reduced to provide a place where the upper side of the retainer can buckle downwards.

3,738,033

STEAM FLATIRON

Llewellyn D. Busby, Upland, Calif., assignor to General Electric Company, Bridgeport, Conn.

Filed Sept. 18, 1972, Ser. No. 289,848
Int. Cl. D06f 75/06
U.S. Cl. 38—77.83 6 Claims



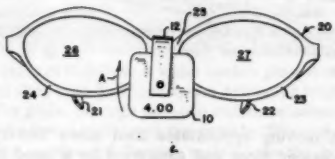
The invention herein discloses a stream flatiron with an integral and continuous smooth heated soleplate without the usual steam ports. In their place there is substituted an alternate supply of steam around the periphery of the soleplate by forming and extending the usual coverplate cup-like to extend substantially down to the ironing surface around most of the soleplate so that it is spaced from the soleplate to define peripheral groove means with the soleplate. The groove may extend along the entire sides of the iron, excluding the heel portion, or only part of the sides of the iron whereby steam exits from the iron along its periphery as a curtain of steam.

3,738,034

SPECTACLE FOR SUNGLASS AND INFORMATION TAG COMBINATION

Charles W. Seaver, Needham, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Sept. 15, 1971, Ser. No. 180,704
Int. Cl. G09f 3/14
U.S. Cl. 40—21 3 Claims



The combination of spectacle or sunglass frames and a price or information tag which cannot be removed without mutilation or destruction thereof. The tag-frame combination cooperate to allow selective positioning of the tag relative to the frame.

3,738,035

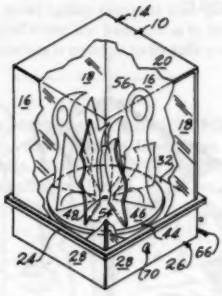
LIGHTED DISPLAY

Albert W. Bricker, 845 Wilson Road, Atlanta, Ga.

Filed Jan. 25, 1971, Ser. No. 109,480
Int. Cl. F21p 03/00
U.S. Cl. 40—106.52 2 Claims

A lighted display providing a most interesting and unusual pattern of streaks of light intermittently pulsed inside an at-

tractive housing. Light appears to travel in lines and in rotation and the effect is obtained from a light bulb mounted on one side of slots and the other side of which has transparent light conductor member such as "Lucite" or "Plexiglas" plastic moving across the slot. In one form the light conducting members are in different shapes and are mounted substantially vertically from a turntable which is motor driven on an enclosed base in which is a pair of slots and respective projection lamps so that as the bottom edge of each light conducting member passes across the respective slot it receives a pulse of light momentarily which is conducted through that member at least momentarily while it continues to rotate. For additional



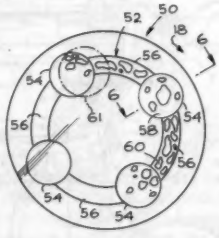
effect the turntable and light conducting members are contained within a plastic housing which has opaque sides, red tinted sides and blue tinted sides. In another form the light conducting members are carried by a revolving belt around cylindrical member in which is mounted a projection lamp inside a second drum in which is a slot communicating with the edge of each light conducting member of which there are several radiating from the drum. In another form the light conducting members are mounted on a slotted belt which is rotated over a transparent drum in which is mounted a second drum in which is mounted the projection lamp and there is a slot in the drum through which the light is conducted.

3,738,036

GLOBULE DISPLAY TOY

Edmund E. Landsinger, Torrance; Wilfred Nagus, Los Angeles; Prodromos Papavasiliou, Gardena, and George W. Stewart, Jr., Costa Mesa, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Feb. 19, 1971, Ser. No. 116,781
Int. Cl. G09f *13/24*
U.S. Cl. 40—106.21 **1 Claim**



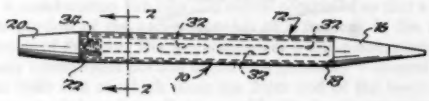
A disc having a thin chamber filled with immiscible fluids such as glycerine and air to form floating bubbles, the chamber having barriers or chamber regions of different thicknesses to provide a sudden change in movement of the bubbles. In one disc, several barriers extend partially across the chamber so that the bubbles slither around the barrier. In another disc, the chamber includes thick regions connected by narrow tubes so that the bubbles suddenly accelerate when they enter the thick regions.

3,738,037

TUBULAR ASSEMBLY HAVING INDICIA DISPLAYING MEANS

Erika Daley, 674 Ellicott Street, Buffalo, N.Y.

Filed July 22, 1971, Ser. No. 165,237
Int. Cl. G09f *11/02*
U.S. Cl. 40—68 **5 Claims**



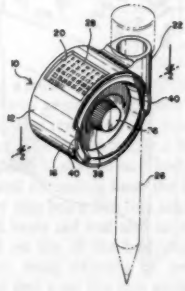
A tubular assembly having an inner shell provided with indicia in the form of English-Metric equivalent units of weights and measures and arranged in circumferentially spaced, longitudinal rows on the outer surface of the shell. A sleeve is mounted about the shell for rotation relative thereto and is provided with a longitudinal row of windows adapted to register with a selected row of indicia carried by the shell. Means are carried by the sleeve for magnifying the image produced by the indicia on the shell and displayed through the windows of the sleeve.

3,738,038

PERPETUAL CALENDAR AND WRITING INSTRUMENT HOLDER

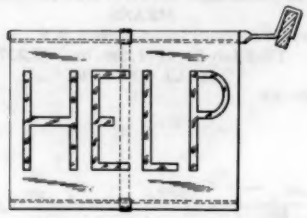
Walter C. Ganz, New York, N.Y., assignor to The Chromatic Corporation, Brooklyn, N.Y.

Filed Aug. 4, 1971, Ser. No. 168,945
Int. Cl. G09d *3/06*
U.S. Cl. 40—111 **8 Claims**



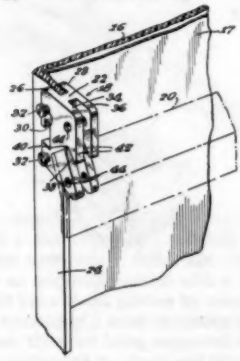
A perpetual calendar and writing instrument holder is attachable to any convenient surface, such as a telephone instrument body, and has an hollow housing with an opening in its outer peripheral surface. A protuberance extends outwardly from the peripheral surface and contains a passageway therethrough generally tangential to the housing, about 90° from the closest edge of the opening. A rotatable inset is positioned within the housing having a plurality of months disposed about its outer periphery, a selectable one of the months to be fully visible through the opening.

3,738,039
HIGHWAY SAFETY AID
Paul DeFuria, 1719 Ixora Drive West, Eau Gallie, Fla.
Filed Aug. 25, 1971, Ser. No. 178,519
Int. Cl. G09f 7/00
U.S. Cl. 40—129 C 6 Claims



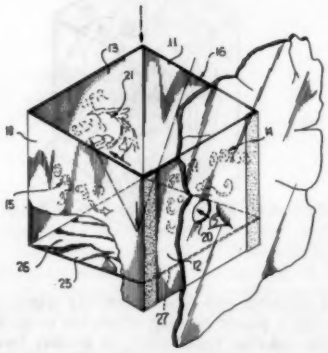
A highway safety aid for automobiles, boats, trailers and the like, having an arm and hook for fitting securely over the upper edge of a glass window or the like, the arm extending outwardly from the window and receiving a channel formed in the edge of a sheet, indicia disposed on the sheet for an emergency sign, a further channel in the opposite edge of the sheet for receiving a rod tending to hold the sheet in out-stretched relation, and a back-supporting member resiliently snapped onto the channels containing said arm and rod for holding the edges of the sign in generally parallel relation.

3,738,040
HANGING DEVICE FOR DISPLAY ELEMENTS ON CHANGEABLE COPYBOARDS
Wilfried Schubert, Bensenville, Ill., assignor to National Advertising Company, Bedford Park, Ill.
Filed Jan. 26, 1972, Ser. No. 220,868
Int. Cl. G09f 7/02
U.S. Cl. 40—140 3 Claims



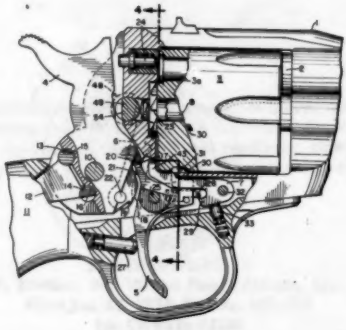
A hanging device for mounting changeable display elements such as letters, characters, and other indicia, particularly pictorial display panels onto changeable copyboards including an adjustable portion adjustably attachable to the pictorial panel and a mounting slot opposite the adjustable portion for engaging a hanger bar on the copyboard background, the position of the hanging device being adjustable on the pictorial panel for adjustably aligning the panel on the copyboard background, and fastening members at the adjustable portion for securely attaching the hanging device to the panel. A reversible handing device in which there are provided on each respective opposite sides thereof both an adjustable portion and a hanger bar mounting slot, so that when in use the adjustable portion and the complementary mounting slot on opposite sides are in use, the handing device being reversible so that if desired the other adjustable portion and its complementary mounting slot on the opposite side of the hanging device can be used in order that the panel can be hung on any one of several different types of hanger bar copyboard backgrounds corresponding relatively to one of the two mounting slots.

3,738,041
BOX
Leonard C. Rattner, 65 W. Penn Street, Long Beach, N.Y.
Filed Mar. 26, 1971, Ser. No. 128,326
Int. Cl. G09f 13/16
U.S. Cl. 40—130 C 5 Claims



A collapsible box-like structure of paperboard having an open top, a viewing opening through the vertical front wall, a display on the forward side of the vertical back wall, and a bottom wall inner surface which is reflective, the bottom wall having a greater length front to back than the distance between the front and back walls which enables the bottom wall to be tilted upwardly back to front, thereby serving both to maintain the box-like configuration of the structure and also to reflect light toward the display.

3,738,042
SAFETY DEVICE FOR REVOLVERS
William B. Ruger, Southport, and Lawrence L. Larson, Bethany, both of Conn., assignors to Sturm, Ruger & Co., Southport, Conn.
Filed Aug. 25, 1971, Ser. No. 174,849
Int. Cl. F41c 17/04, 1/00
U.S. Cl. 42—66 19 Claims



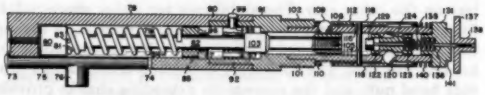
A single action revolver having a rebound hammer, trigger, cylinder, cylinder pawl, cylinder latch and cylinder loading

gate is provided with mutually cooperating hammer safety, loading gate safety and manual safety means for preventing premature ignition of a cartridge in the cylinder. The rebound hammer is provided with a safety notch that engages the sear leg of the trigger when the hammer is in its rebound position. The loading gate is mounted for rotation about an axis parallel to the longitudinal axis of the cylinder, the loading gate having a cam surface that moves the cylinder latch out of engagement with the cylinder and a trigger safety element that prevents significant movement of the trigger and hammer when the hammer is in its rebound position and when the loading gate is rotated to its open position. The manual safety means is mounted for rotation about an axis perpendicular to the longitudinal axis of the cylinder, the safety means having a hammer safety element that prevents forward movement of the hammer and a pawl safety element that prevents upward movement of the pawl when the hammer is in its rebound position and the safety means is rotated to its safe position.

3,738,043
ELECTRO-MECHANICAL FREE PISTOL

Franklin C. Green, 6304 Locker Lane, San Antonio, Tex.

Division of Ser. No. 805,470, March 10, 1969, Pat. No. 3,626,624. This application Dec. 6, 1971, Ser. No. 204,942
Int. Cl. F41c *19/12*
U.S. Cl. 42—69 A 8 Claims

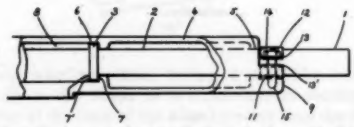


An electro-mechanical free pistol wherein the barreled action, including the firing mechanism, does not greatly exceed the outside diameter of the barrel except for the bolt handle and sights, said barreled action serves as a platform upon which the grip and trigger switch are adjustably positioned and electrically connected.

3,738,044
ANTI SPIN-KICK FIREARM

Russell S. Robinson, 277 Main Street 2B, Farmington, Conn.

Filed Oct. 9, 1970, Ser. No. 79,377
Int. Cl. F41c *21/00, 27/00;* F41d *11/00*
U.S. Cl. 42—75 B 6 Claims

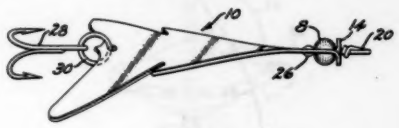


A firearm firing spin-stabilized projectiles having a barrel which can rotate or oscillate about its axis with respect to the receiver, said rotation or oscillation being constrained so that the reactive torque impacts resulting from the rapid spinning of the projectile during each discharge are smoothed out or applied to the receiver over a relatively long time in such manner that a very light weight, hand-held firearm firing automatically experiences negligible throw-off resulting from said torque impacts.

3,738,045
COMBINATION FISH LURE AND SWIVEL

Ewell J. Harris, c/o Sunset Mobile Homes, Route 3, Box 135A, Adrian, Mich.

Filed June 16, 1971, Ser. No. 153,528
Int. Cl. A01k *85/04*
U.S. Cl. 43—42.12 1 Claim

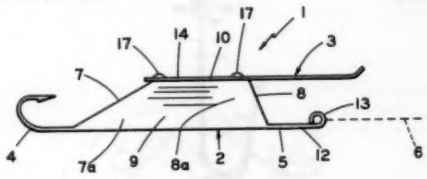


A combination fish lure and swivel combined so that a sizable portion of the swivel appears as a fish egg in the open mouth of the lure. The lure comprises a one-piece, plate-like body whose front portion contains a generally V-shaped slot, the wide end of which faces the front end of the body. The front end is bent laterally to one side, the bent portion including the wide end of the slot, with the portion of the body originally contained within the slot now extending from the other side to form an abutment, thus leaving an opening within the body. Pull means extends through the abutment and retains a bead which substantially fills the opening.

3,738,046
ADVANCING FISH LURE

Nels A. Johnson, 300 Shady Lane, Palatine, Ill.

Filed June 16, 1971, Ser. No. 153,593
Int. Cl. A01k *85/04, 95/00*
U.S. Cl. 43—42.39 7 Claims



A fish lure having a free water floating fall glide forward in a more toward horizontal angle to the water surface and having a pulled anti-gravity rise rearward in a more steep inclination to the water surface. The lure includes a downwardly tapered longitudinally weighted V-shaped hull body having a fish hook mounted thereon and extending from the lower forward body nose end. The body also has a fish line anchor extending from the lower rearward body tail end and an overhead flat stabilizer wing mounted on top of the body rearward of the nose end. The stabilizer wing extends in overhanging relation beyond the tail end and over the line anchor and terminating rearwardly in an upturned wing portion for retarding descent of the lure in free fall glide.

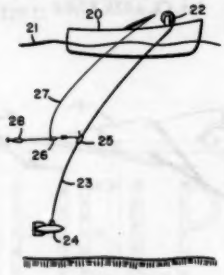
3,738,047
FISH LINE CARRIER

Larry T. Tozer, 4460 Keener Road, Muskegon, Mich.

Filed June 11, 1971, Ser. No. 152,091
Int. Cl. A01k *91/00, 95/00*
U.S. Cl. 43—43.12 2 Claims

A line carrier for moving a fish line down a weight-suspension line in which hydrodynamic forces generated by trolling

action are utilized to provide a downward force to induce movement of the carrier downward along the weight suspen-



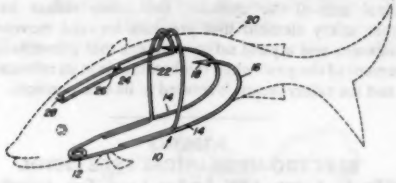
sion line to a predetermined depth. The fish line is releasably secured to the carrier so that a strike will pull the fish line free of the restraint of the carrier.

3,738,048
BAIT AND HOOK HOLDER
James L. Duchscher, 1916 7th Street N.W., Minot, N. Dak.
Filed May 4, 1971, Ser. No. 140,111
Int. Cl. A01k *83/06*
U.S. Cl. 43—44.2 5 Claims

An angler's line attached fishing device characterized by a U-shaped bait and hook holder. One leg of the holder has a line attaching eye. The other leg constitutes, in part, a bait impaling shank. The shank has a free pointed end adapted to pierce the bait lengthwise and in such a manner that it can be impaled, positioned and retained on the shank. The pointed end fits into the bore of a detachable sleeve at one end thereof. A projecting, other end portion of the sleeve provides a socket for the shank of a conventional fishhook. Latches on the sleeve position and retain the sleeve on the shank and hold the shank portion of the attachable and detachable fishhook. Prongs are also provided to assist in holding the bait, a smelt, on the shank and sleeve.

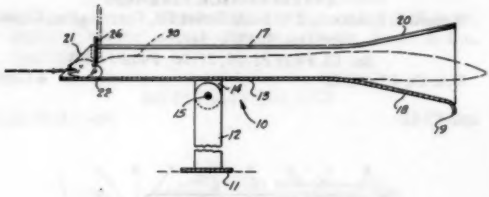
3,738,049
FISH HOOK AND LIVE BAIT HARNESS
Benito Gonzalez Garza, 4806 Urban Street, Corpus Christi, Tex.
Filed Nov. 12, 1971, Ser. No. 198,107
Int. Cl. A01k *83/06*
U.S. Cl. 43—44.4 9 Claims

A fish hook and live bait harness for minnows or other similar size live bait fish, and also for live shrimp bait including a coil spring of resilient wire providing an eye for the fish line, with a pair of shanks extending rearwardly from the coil spring eye, the coil spring eye normally urging the shanks toward each other. In one form, the shanks terminate in curved barbed hooks, the barbed hooks extending forwardly toward the coil spring eye, and in another form, the shanks terminate in toes extending toward each other on which is placed the eye of a treble hook. In each case, an upwardly extending loop is secured on each shank in a plane at right angles to the plane of the shanks, the loop ends passing beyond each other and then



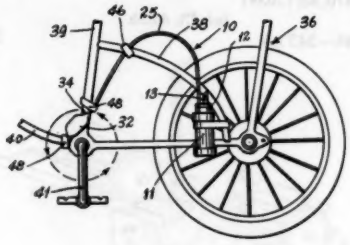
providing parallel arms extending parallel to the hook shanks providing bait securing harness extending either forwardly or backwardly. Each arm has a spur at an intermediate point and a stabilizer at the end which extend toward the spur and stabilizer on the other arm. The stabilizers are either sharp points for engaging minnows or small loops for supporting a shrimp tusk. The shank loops and arms provide a harness or saddle for holding live bait. The forwardly extending hook shanks provide head pull, and the rearwardly extending shanks provide tail pull.

3,738,050
EEL HOLDER
Willis D. Naill, 703 E. Valencia Street, Lakeland, Fla.
Filed Dec. 28, 1971, Ser. No. 213,055
Int. Cl. A01k *97/00*
U.S. Cl. 43—53.5 5 Claims



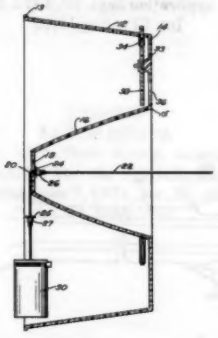
An eel holder which includes an elongate hollow tube having a flared inlet end and a longitudinal slot extending from end to end of the tube. The tube is supported on a base and has a transverse slot opening downwardly therein at the end thereof opposite the inlet end. A clamp member is pivotally secured to the tube and has a jaw member which engages through the transverse slot to clamp an eel immediately back of the head to immobilize the eel while removing the hook. A bar is secured to the tube and extends upwardly therefrom. A plurality of bores are formed in the bar to receive a securing pin extending through the clamp so as to adjustably secure the clamp in clamping to permit both hands to be used in extracting the hook from the mouth of the eel.

3,738,051
DEVICE FOR GENERATING BUBBLES IN RESPONSE TO MOVEMENT OF A VEHICLE
Dale G. Wakeem, Plad Star Route, Windyville, Mo.
Filed Dec. 28, 1971, Ser. No. 212,969
Int. Cl. A63h *33/28*
U.S. Cl. 46—7 5 Claims



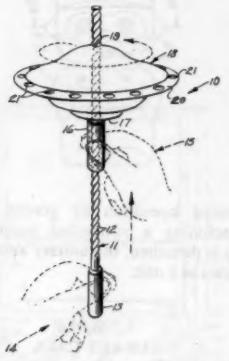
A device for generating bubbles responsive to movement of a vehicle comprising a bottle for containing a bubble solution, means for mounting the bottle to the vehicle, and means responsive to movement of the vehicle for forcing air into the bottle and producing bubbles therefrom.

3,738,052
WHEEL TOY
Gerald C. Kelly, 16 Dunmore Road, Warwick, R.I.
Filed Feb. 5, 1971, Ser. No. 112,982
Int. Cl. A63h *33/00*
U.S. Cl. 46—51 5 Claims



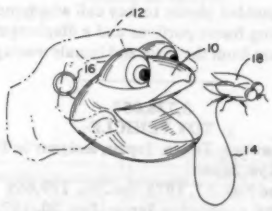
A toy whirling wheel having a shell-like configuration generally in the shape of a frusto-conical section with the diameter at the base of the wheel greater than the diameter at the top of the wheel. The top surface of the wheel has its central portion recessed downwardly with a bore therethrough located on the axis of the wheel. A rope passing through the bore acts as an axle about which the wheel turns and stops on the rope limit the axial movement of the tope back and forth through the bore. A bag in which weights may be placed is attached to the end of the rope inside the shell of the wheel. Attached to the underside of the top surface are a plurality of rotatable discs each having a chord portion extending outwardly through slots in the side annular wall of the wheel. The discs each have an identical set of symbols on their top face with the symbols being selectively viewable through windows in the top surface of the wheel.

3,738,053
FLYING SAUCER TOY
John T. Camarota, 1655 S. Taney Street, Philadelphia, Pa.
Filed Oct. 12, 1971, Ser. No. 188,154
Int. Cl. A63h *27/00*
U.S. Cl. 46—74 D 1 Claim



A toy device. This device includes a hand-launching element having an elevatible sleeve freely carried upon a convoluted member which when the sleeve is raised will cause a plastic toy vehicle to rotate and become air borne.

3,738,054
ANIMAL ACTION TOY
Victor Petrusek, 14611 Halsted Street, Harvey, Ill.
Filed Nov. 11, 1971, Ser. No. 197,850
Int. Cl. A63h *13/02*
U.S. Cl. 46—141 3 Claims



Animal Action Toy comprising a body formed of resilient material in the shape of an animal's head which upon compression opens its mouth as if to catch a bug, nut, or other smaller animal, tethered to one end of an elastic or rubber chord, the other end being attached to the roof of the animal's mouth, whereby the bug or the like may be tossed away from the animal's head, the head compressed to open the animal's mouth, and the bug caught in the animal's mouth on rebound.

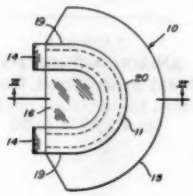
3,738,055
DOLL HAVING GRAVITY-ACTUATED CHANGEABLE EYES AND DENTURE ARRAYS
Orlin G. Marble, 1216 S. Garfield, Alhambra, Calif.
Filed Sept. 7, 1971, Ser. No. 178,009
Int. Cl. A63h *13/00*
U.S. Cl. 46—135 R 9 Claims

An animated doll having a hollow body and a head with eye and mouth openings with mechanism therebehind for display-

ing different successive arrangements of eyeballs and dentures giving the doll a variety of facial expressions. The actuating mechanism can be actuated manually by an operating lever or

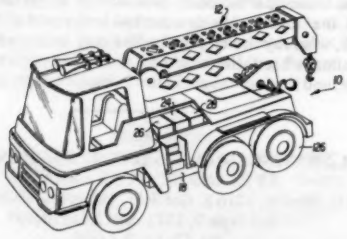
set in automated operation by gravity responsive drive mechanism including a concealed pendulum. When the removable top is detached, the unitary animating mechanism can be withdrawn as a unit.

3,738,056
TURKEY CALL
Fred R. Schultz, 3328 Havard Street, Lower Burrell, Pa.
Filed Sept. 17, 1971, Ser. No. 181,541
Int. Cl. A63h *5/00*
U.S. Cl. 46—178 **6 Claims**



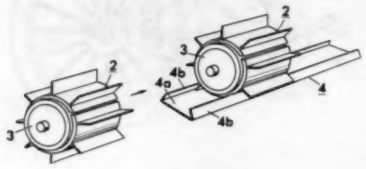
A simplified molded plastic turkey call which includes male and female mating frame portions and a diaphragm extending in a taut condition from the male and female mating portions.

3,738,057
TOY VEHICLE
Toyotsugu Ogasawara, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan
Filed Nov. 17, 1971, Ser. No. 199,669
Claims priority, application Japan, Jan. 20, 1971, 46/2037; Jan. 20, 1971, 46/2038; Jan. 20, 1971, 46/2039
Int. Cl. A63h *33/26*
U.S. Cl. 46—243 **8 Claims**



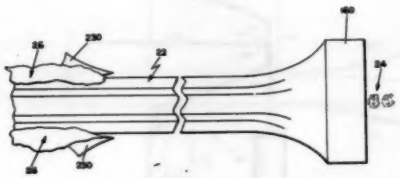
An electric motor, switching system and gear train for driving the wheels of a toy vehicle to propel same and sequentially raising and lowering a working mechanism such as a crane, mixer or dumper while movement of the vehicle is stopped.

3,738,058
MODEL PLANE HAVING RADIATING MEANS
Kenichi Mabuchi, Tokyo, Japan, assignor to Mabuchi Motor Co., Ltd., Tokyo, Japan
Filed Dec. 2, 1971, Ser. No. 204,039
Claims priority, application Japan, Dec. 4, 1970, 45/120390; Dec. 4, 1970, 45/120391
Int. Cl. A63h
U.S. Cl. 46—243 AV **2 Claims**



A model plane having a means for radiating heat generated by a dry cell mounted on said model plane for a power source of a miniature electric motor by which the model plane is adapted to fly in the air, to work the dry cell at its top capacity.

3,738,059
MOBILE THERMOFORMING APPARATUS AND METHOD
James B. Haviland, Jr., and Charles R. Balkema, both of Grand Rapids, Mich., assignors to Haviland Agricultural Chemical Company, Grand Rapids, Mich.
Division of Ser. No. 15,648, March 2, 1970, Pat. No. 3,661,481. This application Sept. 30, 1971, Ser. No. 185,252
Int. Cl. A01g *13/02*
U.S. Cl. 47—26 **1 Claim**



Thermoforming apparatus and method for continuously thermoforming a continuous web or sheet into a self-supporting, protective crop cover, preferably hat-shaped in cross-sectional configuration. The apparatus utilizes counter-rotating forming means, specifically sets of wheels on two adjacent axles, each set having primary forming wheels fixed to the axle and cooperative idler forming wheels freely rotating thereon, each idler wheel cooperating with a primary wheel on the opposing axle. Heat is supplied to the forming means, preferably by circulation of heated fluid. Forming pressure is supplied by shifting the forming means into cooperative relationship.

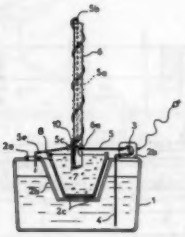
Such a crop cover is continuously formed by simultaneously heating and bending the sheet or web material into the configurated shape, and is continuously positioned over the row as formed, and anchored by pushing dirt onto its flanged edges.

3,738,060

PLANT SUPPORT WITH WATERING TUBE SPIRALLING THEREAROUND

Jean Jullien-Davin, Valence, France, assignor to Crouzet, Paris, France

Filed Mar. 1, 1972, Ser. No. 230,819
Claims priority, application France, Mar. 5, 1971, 7108001
Int. Cl. A01g 27/00
U.S. Cl. 47—38.1 3 Claims



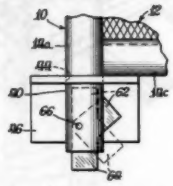
Device for the automatic spraying of household plants, in particular creepers along a moss-lined support which moss must be maintained in a humid condition, comprising a water tank, an electric pump with a suction tube immersed in the tank, a discharge tube connected to the pump, said discharge tube being water tight in a first ascending part rising to the top of the support, and then porous in a second descending part winding into a spiral around the support and then water tight in a third descending part returning to the tank, a textile wick being arranged along the support in contact with at least one part of said porous part of the discharge tube and extending towards the bottom of the earth in the pot.

3,738,061

LATCH MEANS

Joseph Catalano, 1218 West Grand Avenue, Chicago, Ill.

Continuation-in-part of Ser. No. 793,966, Jan. 27, 1969. This application June 7, 1971, Ser. No. 150,336
Int. Cl. E06b 9/00
U.S. Cl. 49—50 1 Claim



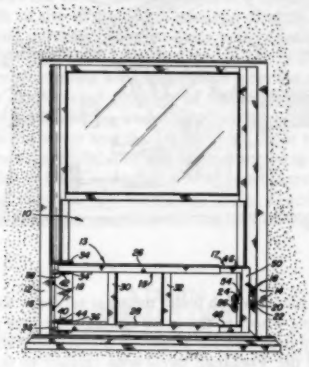
A panel made up of an expanded metal mesh with frame members of split tubing receiving the edges of mesh and gripping it, and molded into a rigid unitary frame; and hinge means for mounting the panel on the support. The device also includes a latch for automatically locking in response to the device being put into place.

3,738,062

SECURITY AND SAFETY DEVICE FOR APERTURES IN BUILDINGS

Harry A. Ughi, Central Boulevard, New Hyde Park, N.Y.

Filed Nov. 11, 1971, Ser. No. 197,677
Int. Cl. E06b 3/68
U.S. Cl. 49—55 5 Claims



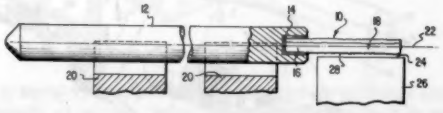
Illegal or unauthorized ingress or egress from a building through an aperture such as a window is prevented by a telescopically adjustable safety and security device mounted in the aperture which may be readily pivoted out of the way when it is not required.

3,738,063

APPARATUS FOR MAKING SOLID DIAMOND DRILLS

John A. Cupler, II, 10 Cupler Drive, LaVale, Cumberland, Md.

Filed Feb. 5, 1971, Ser. No. 113,064
Int. Cl. B24b 3/24
U.S. Cl. 51—50 R 9 Claims



The disclosure is directed to an apparatus for machining solid diamond drills, whrein such drills are machined without regard to natural cleavage lines. The drills are machined to a desired three-dimensional configuration by providing a yieldable engagement of the diamond with an endless machining member in accordance with the surface which are to be machined.

3,738,064

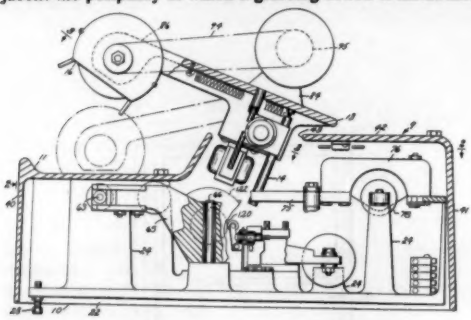
LENS EDGING MACHINE

Morris Szyferblatt, Spring Valley, N.Y., assignor to Optimetric Systems, Inc., Spring Valley, N.Y.

Filed Nov. 26, 1971, Ser. No. 202,147
Int. Cl. B24b 5/16, 17/04
U.S. Cl. 51—93 4 Claims

A lens edging machine for grinding spectacle lenses having elements for grinding a concealed V-shaped bevel of width

less than the peripheral thickness of the lens which will follow the curvature of the peripheral edge of the lens, so that the frame in which the lens is mounted may also follow this curvature, while concealing the bevel for a more attractive appearance. The device includes a feeler member directly contacting the forward surface of the lens at a locus of points adjacent the periphery at which a grinding action is instantaneously taking place, which feeler member serves to axially position a grinding wheel as the same contacts the lens periphery. Elements are provided for adjusting the distance of the principal axis of the V-shaped bevel with respect to the forward surface of the lens, which elements may also be adjusted to provide for flat edge grinding where a V-shaped bevel is not desired.

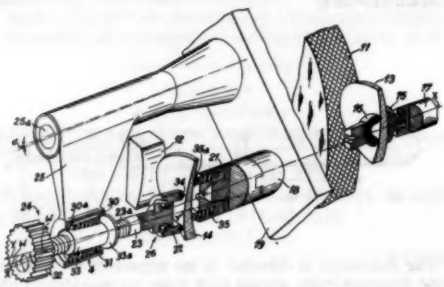


3,738,065

MACHINE FOR TRIMMING AND BEVELLING THE EDGES OF OPHTHALMIC LENSES

Luc A. Tagnon, Saint Mande, France, assignor to Societe des Lunetiers, Paris, France

Filed Feb. 1, 1971, Ser. No. 111,503
Claims priority, application France, Feb. 3, 1970, 7003722
Int. Cl. B24b *7/00, 9/00, 41/06*
U.S. Cl. 51—101 LG **11 Claims**



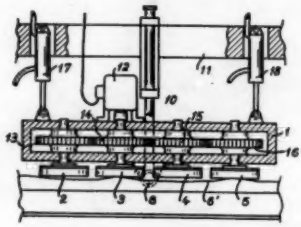
A device designed for fastening the end of a rotatably driven spindle to an object of substantially flat configuration. The device comprises a first plate rotatably driven from a rotary spindle and a second plate adapted to clamp the object against the first plate and is rotatably mounted through the medium of an axial thrust rolling-contact bearing to the end of another axially movable spindle carried by the end of a bracket, together with means to cause the axial movement of the other spindle. A resilient sleeve is interposed between the bracket and the second spindle to enable the second spindle to perform transverse movement in relation to the axis of the first spindle while resiliently and axially urging the second spindle towards the object. The device is applicable to the clamping of a templet in a machine for trimming and/or bevelling or edge-grinding ophthalmic lenses.

3,738,066

DEVICE FOR GRINDING LONG UNDULATION WAVES OF RAILWAY RAILS

Romolo Panetti, 24, Parc Chateau Banquet, Geneve, Switzerland

Filed Apr. 6, 1971, Ser. No. 131,668
Claims priority, application Switzerland, Sept. 14, 1970, 12235/70
Int. Cl. B24b *23/00, 7/00, 9/00*
U.S. Cl. 51—178 **13 Claims**



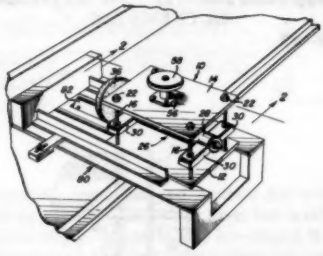
A device for grinding long undulation waves of railway rails, comprises a train of rotatable grinding wheels mounted on a rigid runner of a length greater than the longest undulation to be ground and oriented in the direction of the rail. The runner is supported from a chassis rollable on the rails by means of a suspension such that the resultant of the driving force of the runner and of the force applying the grinding wheels against the rail passes substantially through the center of the active surface of the grinding wheels to avoid the development of a force tending to pivot the runner about a transverse axis.

3,738,067

JOINTER BLADE GRINDER

Howard J. Smith, Roswell, N. Mex., assignor to Ruby A. Miller, Roswell, Minn., a part interest

Filed Mar. 10, 1971, Ser. No. 122,680
Int. Cl. B24b *3/38*
U.S. Cl. 51—249 **6 Claims**



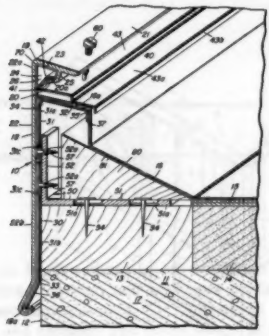
A grinding tool specifically adapted for utilization in sharpening jointer blades and the like comprising an elongated shaft rotatably mounted within a housing. One end of the shaft is adapted to mount a grinding wheel, the second end of the shaft is adapted to engage with a source of power for a rotational driving of the shaft. The housing slides vertically on upstanding posts which extend between upper and lower plates. An enlarged housing engaged threaded shaft is utilized to effect a vertical adjustment of the grinding wheel.

3,738,068

CONJOINT FACIA AND WATER DAM

Julian J. Attaway, Tucker, Ga., assignor to Miscellaneous Manufacturing Corporation, Tucker, Ga.

Filed Oct. 31, 1972, Ser. No. 302,597
Int. Cl. E04d *13/15*
U.S. Cl. 52—60 **10 Claims**



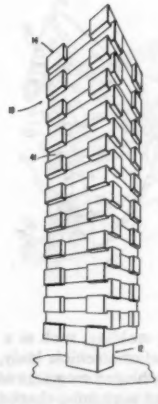
A conjoint facia and water dam for use as a roof deck appurtenance is provided and as installed is characterized by having cant means include a resilient free-ended jaw secured to lead having a rearwardly and downwardly inclined portion and a projecting end of the jaw above the roof deck, there being facia means leading frontally outside the resilient jaw and constrained against upward movement, and flashing and thrust means acting interposed between the facia means and the resilient jaw to clamp a marginal end portion of sheet roofing against the rearwardly and downwardly inclined portion of the jaw and incidentally spring the jaw resiliently toward the facia means and urge the facia means in an upward and inward direction thereby stabilizing the assembly having the sheet roofing rearward of where clamped depend from the jaw and lead below the projecting end of the jaw.

3,738,069

MODULAR BUILDING CONSTRUCTION

Octaviano De J. Navarrette-Kindelan, Santurce, P.R., assignor to Anthropos, Inc., San Juan, P.R.

Filed Sept. 18, 1970, Ser. No. 73,326
Int. Cl. E04b *1/348, 1/34*
U.S. Cl. 52—73 **20 Claims**



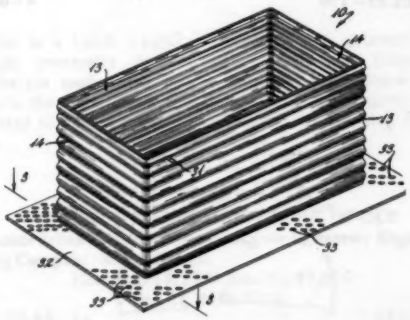
The building construction includes a stem upstanding substantially the entire height of the building with box-like modules supported along the height of the stem at various building levels. To elevate the individual modules to predetermined building levels, lifting lines extend from a winch adjacent the base of the stem upwardly within the stem and about a pair of pivotal sheaves and a selected pair of fixed sheaves cantilevered outwardly of the stem. The lifting lines extend vertically along and outwardly of selected sides of the stem for connection with cradles carrying the modules, the cradles and modules being transportable to adjacent the base of the stem vertically below their final position in the building. The modules are lifted vertically and, at a specified level, the inner walls of the modules are secured directly to the stem with the end portions of the modules being cantilevered from the stem. At the level next below, modules are disposed such that their end portions are cantilevered from the stem and underlie the cantilevered portions of the superposed modules. The inner walls of the underlying modules are connected directly to the tower and the cantilevered inner end wall portions of the superposed modules are connected to the underlying modules to form a cantilevered support therefor whereby underlying modules are supported both directly from the tower and from the cantilevered support of the superposed modules.

3,738,070

BURIAL VAULT

Glen A. Yarbrough, P.O. Box 126, Clarksville, Ark.

Filed Mar. 12, 1971, Ser. No. 123,647
Int. Cl. E04h *13/00*; E04c *1/00*
U.S. Cl. 52—130 **4 Claims**



A burial vault apparatus for the interment of bodies either partially or entirely below ground level. The vault is constructed of corrugated lightweight material which is airtight and moisture-proof and from which air may be evacuated, and such vault is provided with structure to resist vertical movement.

3,738,071

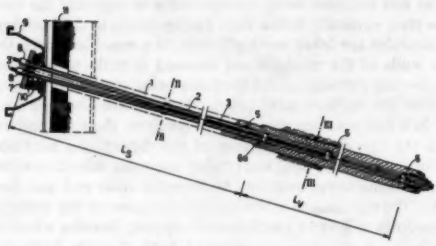
TENSION ELEMENT FOR CONSTRUCTING A PRESTRESSED TENSION ANCHOR IN THE GROUND

Klemens Finsterwalder, Socking uber Starnberg, Germany, assignor to Firma Dyckerhoff & Widmann Aktiengesellschaft, Munich, Germany

Filed Aug. 11, 1971, Ser. No. 170,884
Claims priority, application Germany, Aug. 21, 1970, P 20 41 526.3
Int. Cl. E02d *5/38, 5/54*
U.S. Cl. 52—155 **3 Claims**

Tension element for a pre-stressed tension anchor in the ground with a connection between the surface of the tension

member and the wall of a bore hole, which comprises a plurality of individual elements preferably in the form of bars extending along an anchoring stretch and a tensioning stretch and bunched together in bundle form along the anchoring



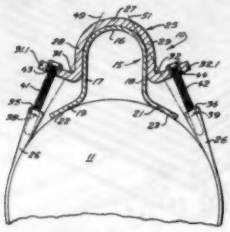
stretch of the element without an outer casing and provided along the tensioning stretch with individual casings, where the connection is in the form of an injected hardening material and the elements are tensioned individually.

3,738,072

POLE REINFORCING APPARATUS

Walter Hilmer Adrian, 3350 Lefeuvre Road, R.R. 2, Aldergrove, B.C., Canada

Filed Apr. 7, 1972, Ser. No. 242,031
Int. Cl. E02d *37/00*; E04g *23/02*; E04h *12/04*
U.S. Cl. 52—170 4 Claims



Pole reinforcement apparatus for reinforcing a wooden utility pole which includes a stub adapted to be driven into the ground along side the pole the stub having a body portion of substantially U-shaped cross section having side legs from which lateral flanges extend for tangential engagement with the pole. A flexible tension member extended around the pole is connected to flanges extending laterally from legs of a U-shaped cap which fits over the stub body for binding the stub to the pole.

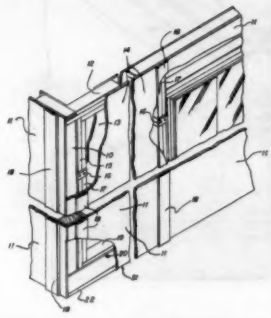
3,738,073

PREFABRICATED BUILDING STRUCTURES

Laureat A. Boulanger, P.O. Box 1059, Geraldton, Ontario, Canada

Claims priority, application Canada, Feb. 7, 1972, 134,085
Filed Feb. 28, 1972, Ser. No. 229,762
Int. Cl. E04b *2/56*
U.S. Cl. 52—282 2 Claims

The invention relates to an improved method of assembling prefabricated building structures, and is particularly applicable to structures where the wall panels are prefinished, i.e. where all services such as electricity and plumbing are built in. In the prefabricated building structure according to the invention there is provided a roof section and a floor section, a series of vertically arranged wall forming panel sections held fixedly in edge-to-edge relation by generally U-shaped clamp means extending from one panel section to another, and having portions thereof embedded within slots formed in the panel sections. The panel sections are connected with a plu-



rality of corner posts by intermediate structural elements each of which is attached to, and extends substantially the height of a post, each element having on a face abutting a post, a plurality of vertically spaced apart transversely extending slots arranged in horizontal alignment with the slots formed in the panel sections. The panel sections are then attached to the member by a plurality of clamps extending into slots in the member and the panel section.

3,738,074

MOLDING RETAINER

Herbert D. Tucker, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 13, 1969, Ser. No. 876,545
Int. Cl. E04f *19/02*, *13/15*
U.S. Cl. 52—718 6 Claims

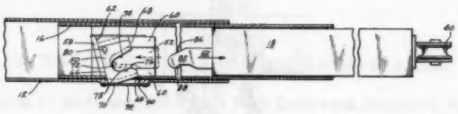
A retainer for securing molding, such as a window garnish molding to a support panel of a vehicle body, the retainer including a pair of integrally hinged members adapted to engage the inner curved edges of a channel-shaped molding and a lateral tongue extending from each of the hinged members adapted to engage a molding support panel.

3,738,075

EXTENDIBLE BOOM WITH LATCH MEANS FOR EXTENSION AND RETRACTION

Harold K. Nansel, Waverly, Nebr., assignor to National Crane Corporation, Waverly, Nebr.

Filed June 16, 1971, Ser. No. 153,761
Int. Cl. B66c 23/04; E04h 12/34
U.S. Cl. 52—115 16 Claims



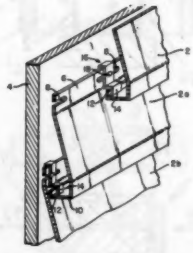
This is an improvement in an extendible boom assembly having a lower section and an upper section and an intermediate section mounted for telescopic movement with respect to one another. The boom assembly has power means connected to the lower and upper sections for extending and retracting the boom assembly. The improvement comprises latch members carried by the upper and intermediate sections. One of the latch members is movable to a latched position wherein it retentively engages the other of the latch members so as to cause the upper and intermediate sections to be locked together for movement in unison. This one latch member is movable from its latched position to a release position wherein it releases the other latch member from retentive engagement. A bearing surface slidably engages the latch member during extension of the upper and intermediate sections, and holds the latch member in its latched position until the boom assembly extends to a predetermined point at which time it permits the latch member to move to its release position. The engagement between the two latch members is such that the movable latch member is urged towards its release position whenever the upper section extends with the latch members in retentive engagement with one another.

3,738,076

NAILING CLIP FOR PLASTIC SIDING

Gerald Kessler, 388 Cranberry Road, Boardman, Ohio

Filed Sept. 7, 1971, Ser. No. 177,989
Int. Cl. E04d 1/34
U.S. Cl. 52—547 4 Claims



Plastic siding made to simulate clapboards is now made with an integral top locking strip having a downward projection spaced from the body of the siding into which an upturned projecting strip, on the bottom of the next higher course of siding, can be fitted when applying the siding to a house. The present disclosure eliminates this integral locking strip and provides instead small nailing clips of a special construction which are less expensive and which are constructed so that the siding can be nailed in place loosely, which is desirable to permit thermal expansion and contraction of the siding.

ERRATUM

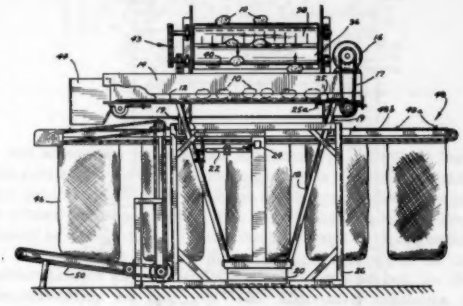
For Class 52—582 see:
Patent No. 3,738,083

3,738,077

BATCH WEIGHING MACHINE

Rex J. Leach, Moorhead, Minn., assignor to Paul Horn Farms, Inc., Moorhead, Minn.

Filed Apr. 26, 1971, Ser. No. 137,529
Int. Cl. B65b 57/10
U.S. Cl. 53—59 W 5 Claims



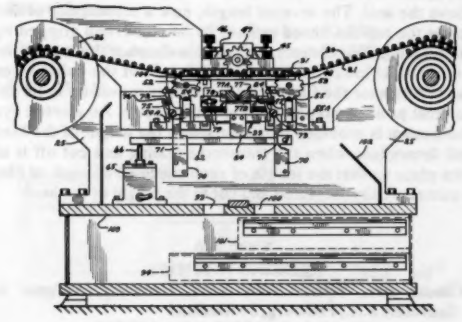
This is a batch weighing machine which automatically weighs successive batches of material and thereafter discharges each batch into a container pre-positioned to receive the same. The weighing apparatus is particularly constructed to use a conventional scale for the weighing operation.

3,738,078

CUTTING, SORTING AND STORING DEVICE

Gunther Schaaf, Fridely, Minn., assignor to Ramsey Engineering Company, St. Paul, Minn.

Filed Dec. 14, 1970, Ser. No. 97,874
Int. Cl. B65b 57/10
U.S. Cl. 53—54 14 Claims



A device for receiving plated memory wire for use in precision applications and cutting the wire into desired length, sorting out the wire lengths that are acceptable and storing the acceptable lengths into plastic tubes where they will be free from

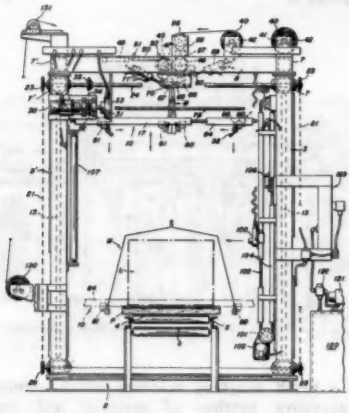
contamination, and will not be handled by humans. The machine utilizes a bandolier of storage tubes that sequentially pass through a wire cutting station so that acceptable wires are inserted into the tubes, and the rejects are kept out of the tubes. The machine is designed for placement into a closed loop, in line plated wire system so that the wire lengths are not touched even during the storage operation.

3,738,079

BAG TYPE SHRINK WRAPPING APPARATUS

Regis M. Rudman, Braddock, and Lawrence D. Adams, Pittsburgh, both of Pa., assignors to Auburn Engineering, Inc., Pittsburgh, Pa.

Filed Feb. 11, 1971, Ser. No. 114,637
Int. Cl. B65b *1/02, 43/30, 57/12*
U.S. Cl. 53—66 **7 Claims**



In a machine for enclosing a palleted load in shrink-wrap film, a flattened tubular sheet of shrink-wrap film is fed downwardly between pinch rolls to a predetermined level where the leading end is in a plane disposed between two oppositely moving gripping bars that are carried on a vertically reciprocable carriage, the carriage being at its uppermost limit of travel. The two bars move toward each other and approach opposite faces of the leading end of the flattened tube. Gripping the opposite faces of the flattened tube, the bars move apart and the carriage starts its descent, opening the leading end of the film into a four-sided configuration while drawing the open end down over a load centered beneath the pinch rolls. When the required length of tube is so pulled down, the tube is sealed with a transverse seal and severed above the seal. The severed length, now a tubular bag sealed across the top continues to have its lead end, still gripped by the bars, is pulled the remainder of the distance down over the load until its lower end is below the deck of the pallet when the bars release the films and the carriage moves up to its uppermost position prepared to repeat the cycle. An electric eye mechanism is provided that determines the height of the load and determines when the transverse sealing and cut off is to take place so that the length of each successive length of film is automatically measured and cut to the height of the load.

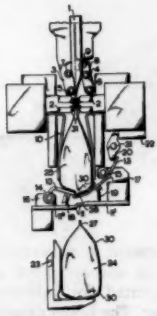
3,738,080

PACKING MACHINE

Wilhelm Reil, Bensheim-Auerbach, Germany, assignor to Sabrefina S.A., Fribourg, Switzerland

Filed July 2, 1971, Ser. No. 159,330
Claims priority, application Sweden, July 3, 1970, 9256/70
Int. Cl. B65b *9/12*
U.S. Cl. 53—180 **9 Claims**

In a packaging machine in which an intermittently fed tube of packaging material is filled with a pourable substance and sub-divided into individual packages by pinching the tube and transversely sealing it at intervals along its length, the combination of a pair of sealing jaws for intermittently applying a transverse sealing zone to the tube, a pair of severing blades for severing a filled and sealed leading portion of the tube by cutting through the said sealing zone to leave the then leading



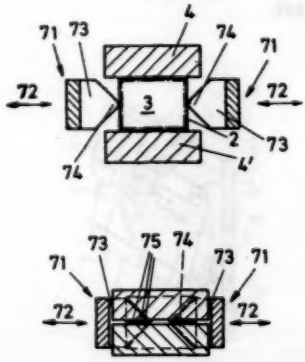
tube end sealed, closure means operative intermittently to pinch the tube shut upstream of the said sealing zone and thereby intermittently interrupt the flow of pourable substance, and clamping means effective to clamp and support the leading tube end at the said sealing zone when the closure means are inoperative.

3,738,081

DEVICE FOR UNITING PARALLEL AND OPPOSITELY DISPOSED WALL PORTIONS OF A TUBE BY TRANSVERSE WELDING SEAMS

Hans Heinzer, Beringen, Switzerland, assignor to Schweizirische Industrie-Gesellschaft, Zurich, Switzerland

Filed June 3, 1971, Ser. No. 149,592
Claims priority, application Switzerland, Apr. 16, 1971, 5579/71; June 8, 1970, 8584/70
Int. Cl. B65b *51/30*
U.S. Cl. 53—180 **3 Claims**



The invention relates to article packaging machines and particularly to a device for connecting oppositely disposed wall portions of a lengthwise moving flexible tube containing rather high articles in axially spaced relation by transverse

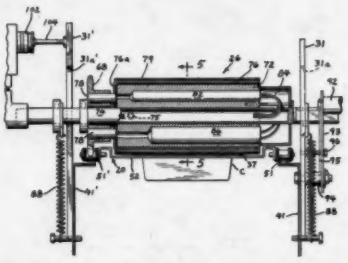
welding seams which are produced by continuously moving welding dies between each article in the tube. In addition to these welding dies the device is provided with two symmetric gusset folders which enter transversely into the space between the dies and the adjacent ends of the spaced articles during the time interval at which the dies press the oppositely disposed wall portions together for engaging the tube material and folding it smoothly against the end faces of the articles during the continuous lengthwise movement of the tube; in fact, the gusset folders do not only move transversely back and forth at right angles to the tube, but also move lengthwise with the tube.

3,738,082

PACKAGING MACHINE WITH IMPROVED SEALING HEAD

Ralph F. Anderson, 332 Calvin Park Boulevard, Rockford, Ill.

Filed Apr. 14, 1971, Ser. No. 133,872
Int. Cl. B65b *51/16*
U.S. Cl. 53—329 18 Claims



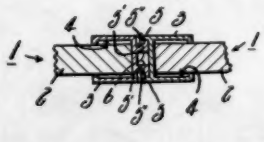
The machine includes an endless conveyor and a sealing head for sealing a cover member to each container. The sealing head has a stationary core and an outer sleeve rotatably mounted on the core. A sprocket, which is connected to the sleeve, meshes with the conveyor chain to rotate the sleeve as the conveyor is advanced. The sealing head is moved to a tilted, inoperative position by lifting the end opposite the sprocket which remains meshed with the chain. The tilting also controls switching of the conveyor drive.

3,738,083

PREFABRICATED HOUSE

Takao Shimano, c/o Shimano & Company Limited, No. 18, Kita Horiedori 2-chome, Nishi-ku, Osaka, Japan

Filed Nov. 10, 1970, Ser. No. 88,256
Claims priority, application Japan, Nov. 25, 1969, 44/94812; Nov. 27, 1969, 44/113629; Dec. 28, 1969, 44/2038; Mar. 31, 1970, 45/31160
Int. Cl. E04c *3/02*
U.S. Cl. 52—582 2 Claims



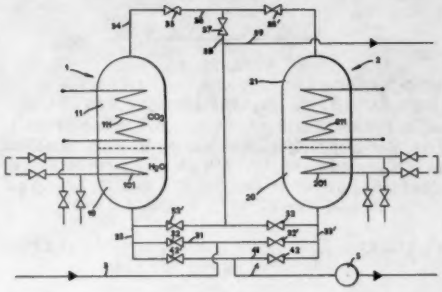
A prefabricated house constructed in accordance with a primary arrangement wherein a number of prefabrication unit panels peripherally provided with dovetail recesses or projections are dovetail-wise interconnected lengthwise and breadthwise; and a prefabricated house constructed in accordance with a secondary arrangement based on said primary arrangement. Other structural advantages and details will be made clear.

3,738,084

ADSORPTION PROCESS AND AN INSTALLATION THEREFOR

Guy Simonet, and Hubert Rico, both of Paris, France, assignors to L'air Liquide, Societe Anonyme Pour L'etude et L'exploitation des Procedes Georges Claude, Paris, France

Filed Feb. 22, 1972, Ser. No. 228,116
Claims priority, application France, Feb. 24, 1971, 716216
Int. Cl. B01d *53/04*
U.S. Cl. 55—31 8 Claims



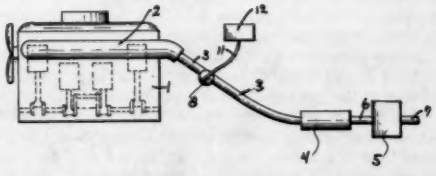
An adsorption process and installation permitting at least the partial elimination of water and carbon dioxide contained in a gas to be purified, is provided. In adsorption phase, the gas is caused to flow in contact with an adsorbant substance contained in an adsorption vessel which includes in the direction of flow of the gas to be purified, a first adsorptive bed for the desiccation of said gas and a second adsorptive bed for the decarbonation of said gas. The adsorptive substance is regenerated in a regeneration phase which comprises a first stage wherein solely the second adsorptive bed is heated and the pressure of the adsorption vessel is reduced to effect desorption of the second adsorptive bed, a second stage wherein said heating is interrupted and the adsorptive substance is scavenged by a gas which has been purified at least partially of carbon dioxide and water so as to reheat the first adsorptive bed and to desorb the first adsorptive bed, and to cool the second adsorptive bed, and a third stage wherein the scavenging of the adsorptive substance is continued and solely the first adsorptive bed is cooled.

3,738,085

DEVICE FOR THE REMOVAL OF DETRIMENTAL MATTER FROM EXHAUST GASES OF INTERNAL COMBUSTION ENGINES

Tomekichi Nishinomiya, 1-11-2, Nijuku, Katsushika-ku, Tokyo, Japan

Filed Sept. 21, 1971, Ser. No. 182,355
Claims priority, application Japan, June 29, 1971, 46/47417
Int. Cl. B01d *53/02*
U.S. Cl. 55—35 8 Claims



Apparatus for the removal of detrimental matter from the exhaust gases of internal combustion engines in which a cylindrical drum having a substantially tangential inlet and an

aligned substantially tangential outlet is disposed in the engine exhaust pipe for imparting a whirling motion to the exhaust gases in the drum. The drum has an orifice therein at the side opposite from the inlet and outlet. A mixing liquid is introduced into the orifice adapted to be dispersed and evaporated by the exhaust gases entering the drum from the engine manifold to thereby cool the drum and the exhaust gases and at the same time to form compounds between the vapor and the detrimental matters prior to passing to the muffler. A dehydrating device receiving the discharge of the muffler is provided for discharging substantially pure air from thedehydracting device into the atmosphere.

3,738,086

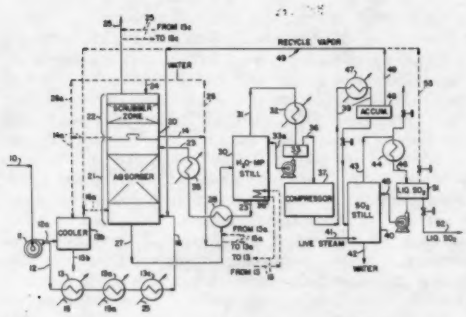
PROCESS FOR USING N-ALKYL LACTAMS FOR STRIPPING SULFUR DIOXIDE FROM GAS STREAMS

Arthur A. Bellisio, Huntington Station, N.Y.; Hippocrates G. Psyras, Berkeley Heights, and Marvin M. Fein, Westfield, both of N.J., assignors to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 872,775, Oct. 30, 1969. This application Apr. 17, 1972, Ser. No. 244,768

Int. Cl. B01d *53/14*

U.S. Cl. 55—48 **35 Claims**



N-alkyl lactam is used to strip sulfur dioxide from gas streams sufficiently to permit the non-polluting discharge of said gas streams to the atmosphere with an SO_2 content of less than about 250 ppm, advantageously of less than 100 ppm or even less than 50 ppm and/or to remove at least 90 percent, desirably 95 percent or more, preferably 98 percent or more, by volume of the SO_2 content of said streams. The gas stream is passed through an absorption zone containing said N-alkyl lactam, e.g. N-lower alkyl pyrrolidone, preferably N-methyl pyrrolidone, at a gas mass flow velocity of 200–3,000 lbs/hr/ft^2, the absorption zone having a length of generally from about 5 to about 85 ft. The gas temperature in the absorption zone is about 0°C–75°C, preferably about 35°C–65 °C. The treated gas leaving the absorption zone and having lactam vaporized or entrained therein is passed directly to a water scrubbing zone at the indicated temperature and flow rate. At least about 90 percent by weight, advantageously at least about 98 percent and preferably 99 percent or more, of the lactam contained in the treated gas stream is removed therefrom in said scrubber zone, permitting the non-polluting discharge of the gas stream to the atmosphere without unacceptable loss of lactam therein. A water stream from the scrubber zone and a lactam stream having SO_2 absorbed therein from the absorption zone are passed to a distillation zone wherein said streams are heated to 100°C–200°C to remove SO_2 and at least a part of the water content of the streams. A lactam-rich stream is recycled from the distillation zone to the absorption zone which aqueous solution of lactam is maintained, said solution generally containing up to about 25 percent by weight water. The SO_2 removed from the distillation zone is readily recovered for non-polluting disposal or use. Recycle of the lactam-rich stream is advantageously at about 5 to about 40 gals of lactam per MCF of gas being treated. Water is fed to the scrubber zone at a rate of about 0.05–2.0, advantageously about 0.05–0.25, gals/MCF of gas being treated.

3,738,087

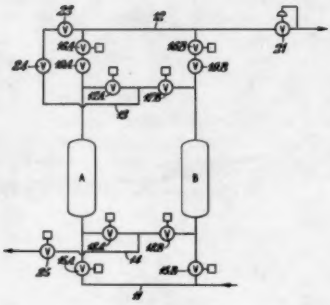
SELECTIVE ADSORPTION GAS SEPARATION PROCESS

Norman R. McCombs, Tonawanda, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed July 1, 1971, Ser. No. 158,779

Int. Cl. B01d *53/04*

U.S. Cl. 55—58 **9 Claims**



Gas mixtures such as air are separated in selective adsorbent beds to produce product such as oxygen by introducing compressed air to a partially repressurized bed, selectively adsorbing nitrogen and discharging oxygen, all at rates such that the bed pressure increases.

3,738,088

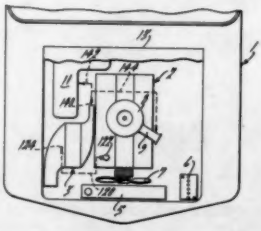
MOBILE AIR CLEANING APPARATUS FOR POLLUTION REMOVAL

Louis E. Colosimo, 23231 Port, St. Clair Shores, Mich.

Filed June 4, 1971, Ser. No. 150,083

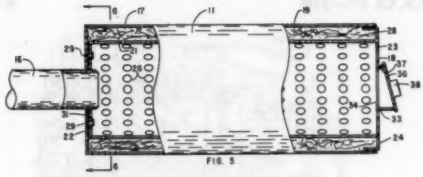
Int. Cl. B03c *3/66*

U.S. Cl. 55—104 **10 Claims**



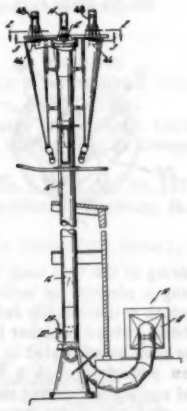
In a driven vehicle an air filtering assembly for cleaning pollution from the ambient air in the path of the vehicle by utilizing the vehicle and assembly as a mobile cleaning device.

3,738,089
EXHAUST GAS FILTER CONSTRUCTION
Robert Brill, 815 Noble Court, Golden, Colo.
Filed Apr. 15, 1971, Ser. No. 134,260
Int. Cl. B01d 46/30
U.S. Cl. 55—310 6 Claims



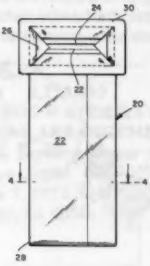
An exhaust gas filter unit for internal combustion engines which utilizes a removable filter supported by a canister and disposed within a shell. The canister and filter are removed for reorienting, cleaning and/or replacing the filter medium. Cooperative construction, interlock and support features of the shell and canister facilitate disassembly and make use of an economical fibered filter medium possible. A bypass outlet is provided, and a gravity type control allows flow therethrough under maximum exhaust flow conditions.

3,738,090
PARTICLE SEPARATION SYSTEM
Rodolfo G. Kilian, Rio Panuco 82, Mexico City, Mexico
Filed Sept. 29, 1970, Ser. No. 76,487
Int. Cl. B01d 45/12
U.S. Cl. 55—349 5 Claims



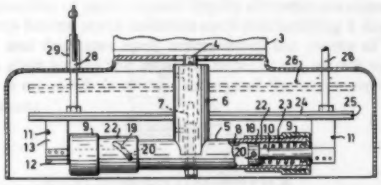
Apparatus is illustrated for separating particles from a carrier gas comprising, in combination, a centrifugal fan having impeller blades and a fan casing with the casing being radially separated from the ends of the blades and a plurality of cyclone collectors radially arranged in close proximity with respect to the fan. Conduits are positioned between the fan and the collectors with one end of the conduits opening into the fan casing and the other ends thereof opening into individual collectors. The walls of the conduits are arranged such that particles entering the conduits from the fan continue to the collectors substantially along an undisturbed trajectory and the conduits have a substantially continuously increasing cross-sectional area from the fan to the collectors.

3,738,091
VACUUM CLEANER FILTER BAG
John E. Fesco, South Hempstead, N.Y., assignor to Studley Paper Company, Inc., Inwood, N.Y.
Filed May 24, 1971, Ser. No. 146,090
Int. Cl. B01d 46/02
U.S. Cl. 55—367 12 Claims



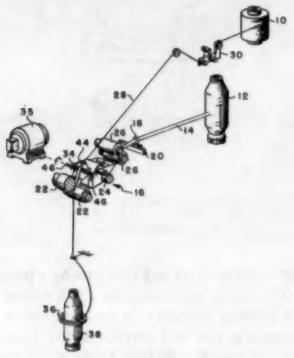
A vacuum cleaner filter bag comprising a paper-like flexible enclosure, the latter including an open-ended portion. The open-ended portion includes an end-surface in which is provided an opening, the end-surface being generally pivotally displaceable relative to adjacent portions of the enclosure. A reinforcing collar which is substantially larger both laterally and longitudinally of the extent of the end-surface is connected to the latter for permitting at least partial deformation of the end-surface from a generally undeformed planar extent to a deformed non-planar extent wherein the periphery of the opening is displaced from the planar extent of the end-surface.

3,738,092
ROTARY MOWER INCLUDING SHARPENER AND METHOD
Herbert W. Spear, 1526 E. 4th St., Santa Ana, Calif.
Filed Jan. 17, 1972, Ser. No. 218,226
Int. Cl. A01d 35/26
U.S. Cl. 56—12.1 3 Claims



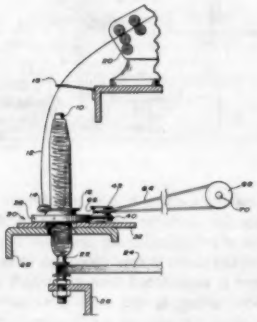
A mower having cutting blades revolvable in a horizontally disposed, circular annular path about, and equally spaced from, the axis of a vertical shaft operably connected with said blades for driving them in one direction in said path. A motor on said mower is connected with said shaft for driving it at a relatively slow idling speed, and a relatively high cutting speed, and a blade supporting mechanism between said blades and said shaft automatically supports said blades in cutting positions under the influence of centrifugal force at said high cutting speed with the cutting edges of said blades directed downwardly and forwardly relative to their direction of movement. At idling speed the blades automatically rotate about horizontal axes to positions with their cutting edges directed upwardly and forwardly, and a circular sharpening stone coaxial with the vertical axis of the shaft supporting said blades is spaced above said blades for lowering to engage the bevel for the cutting edges to sharpen the blades during said idling speed, which stone is then elevated above the blades and releasably held.

3,738,093
YARN GUIDE MOUNTING
Robert M. Ingham, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed Apr. 24, 1972, Ser. No. 247,088
Int. Cl. B65h 57/16; D01h 5/78; B65h 27/00
U.S. Cl. 57—36 4 Claims



A yarn guide for a spinning system which employs a spreader roll to separate the filaments of a continuous multifilament yarn to allow staple yarn to be placed among the separated elements. The yarn guide is supported in position on the roll neck of the spreader roll.

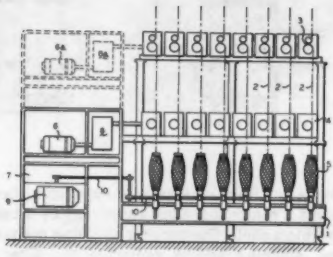
3,738,094
ROTATING RING DRIVE FOR SPINNING MACHINE
Manuel Costales, 3804-31st St., and Moustafa I. Hakki, 4003-21st St., both of Lubbock, Tex.
Filed Sept. 23, 1971, Ser. No. 183,025
Int. Cl. D01h 7/58
U.S. Cl. 57—75 7 Claims



The conventional stationary ring on the ring rail of a spinning machine is replaced with an attachment that rotates the ring by a friction drive from a disc. The disc is rotated by a belt from a horizontal longitudinal shaft.

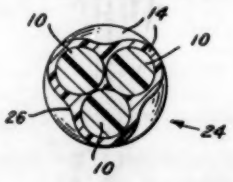
To piece-up down ends or broken yarn upon a spinning machine having rotating rings, the ring and the bobbin are stopped, the ring by a clutch and the bobbin by a brake, and the end of the yarn from the bobbin is threaded through the traveler and then the bobbin and ring re-started to rotating and the splice between the yarn and roving made.

3,738,095
TEXTILE MACHINES WITH UNIFORM DECELERATION OF ITS DRIVE MOTORS
Hans Lobest, Remscheid, Germany, assignor to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany
Filed Nov. 23, 1970, Ser. No. 91,945
Int. Cl. D01h 1/20, 1/22, 1/24
U.S. Cl. 57—100 6 Claims



Textile machines, particularly stretch-twist machines, with several electric drive motors arranged in succession in thread running direction, each motor driving one or more thread treatment or handling devices, e.g., thread-feed heating or stretching godets, winding devices or the like, said devices running at predetermined, adjustable speeds, for example, in a predetermined rpm ratio, or also at a constant thread speed and a predetermined, variable rpm pattern.

3,738,096
MANUFACTURE AND CONSTRUCTION OF STRINGS
Julian T. Crandall, Ashaway, R.I., assignor to Ashaway Line & Twine Mfg. Co., Ashaway, R.I.
Filed Nov. 9, 1970, Ser. No. 87,970
Int. Cl. D02g 3/36
U.S. Cl. 57—149 4 Claims

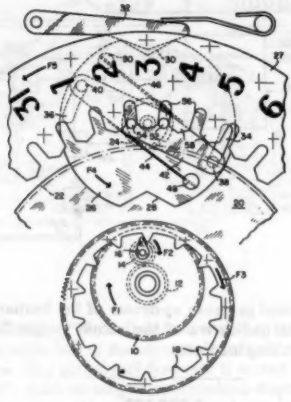


An integrated string of the type used for tennis rackets of the type comprising a plurality of individual thermoplastic strands, each of which is individually twisted in a first hand, the strands then being twisted together in an opposite hand, the resultant string then being coated in a thermoplastic formulation and then passed through a heating chamber to become dried, said coating and drying steps being repeated a plurality of times, after which the string is stretched under heat and then again coated and dried.

3,738,097
MECHANISM FOR DRIVING AND CORRECTING A DATA DISC IN A DAY-DATE TIMEPIECE
Cyril Vuilleumier, Bienne, Switzerland, assignor to Omega, Louis Brandt & Frere S.A., Bienne, Switzerland
Filed July 10, 1972, Ser. No. 270,302
Int. Cl. G04b 19/24
U.S. Cl. 58—5 8 Claims

In a day-date timepiece, a date disc is rotated step by step once every 24 hours by a correspondingly rotated day disc. The motion of the day disc is transmitted to the date disc through a disconnectable drive mechanism whereby the date

disc can be corrected without disturbing the setting of the day disc or the time indication. The mechanism comprises a wheel solid with a pinion meshing with teeth on the outer periphery of the day disc. The wheel is rotated half a revolution at each step of the day disc. It is formed with two diametrically opposite slots down into which extend two studs of a transverse lever. A pair of springs hold the lever in a diametral position with the studs at the trailing end of the slots. Near the center



of the lever are provided a pair of pins which engage in slots between teeth formed along the inner periphery of the day disc. At each half revolution of the lever-carrying wheel in an anticlockwise direction, the pins cause the date disc to advance one step. To correct the date, the date disc is moved in an anticlockwise direction by another mechanism not shown actuated from the winding stem. In so doing, the pins are forced out of the slots in the date disc to jump the teeth of the latter against the action of the springs with the lever being caused to pivot about one of its studs.

3,738,098

ALARM CLOCK WITH HOUR AND MINUTE PRESETTING

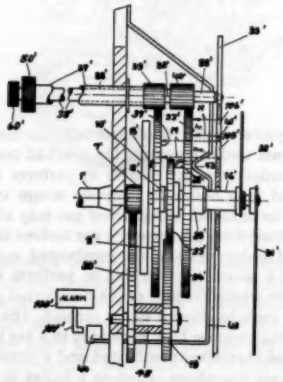
Erich Scheer, Peterzell, Schwarzwald, Germany, assignor to Kundo (Kieninger & Obergfell), St. Georgen (Schwarzwald), Germany

Filed Feb. 1, 1971, Ser. No. 111,585

Claims priority, application Germany, Jan. 30, 1970, P 20 04 077.1

Int. Cl. G04b *23/02*; G04c *21/16*

U.S. Cl. 58—22.5 **7 Claims**



A clock equipped with an electrical or mechanical alarm device has an hour-setting disk and a minute-setting disk which are independently indexable in 24 and 60 different angular positions, respectively, and whose hour and minute markings are visible through a window or windows in the clock housing. Each setting disk is under axial spring pressure and bears a disk which rides on a face of an adjoining follower disk driven by the clockwork at a rate of one or two revolutions per day and one revolution per hour, respectively. Once per revolution, a notch on the face of each follower disk aligns itself with the lug of the associated setting disk to permit axial displacement of the latter; when both setting disks are simultaneously displaced in this manner, the alarm is triggered.

3,738,099

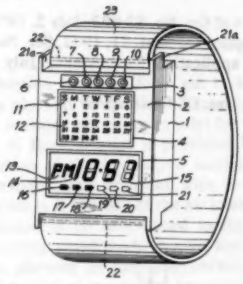
DIGITAL ELECTRONIC WATCH HAVING CALENDAR DISPLAY ARRANGEMENT

Kojiro Tanaka, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed June 7, 1972, Ser. No. 260,685

Int. Cl. G04b *19/24*

U.S. Cl. 58—58 **7 Claims**



An electronic watch is provided with means for digitally displaying time and date and day of the week by means of liquid crystal display elements. The display provides an indication of the second, minute and hour as well as an indication of whether it is morning or afternoon. The calendar display includes a plurality of liquid crystal display elements arranged in matrix form having seven columns each representing a day of the week and five rows each representing the weeks of the month. A plate having the days and dates of the month to be displayed is mounted on said liquid crystal element matrix by suitable means.

3,738,100

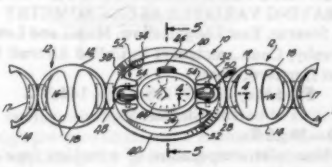
WATCH MOUNTING DEVICE

Jeffrey Hassman, New York, and Walter Luft, Forest Hills, both of N.Y., assignors to Jacoby-Bender, Inc., Woodside, N.Y.

Filed Mar. 1, 1972, Ser. No. 230,675

Int. Cl. G04b *37/00*

U.S. Cl. 58—88 SC **15 Claims**



A watch bracelet construction includes an enlarged watch mounting link adapted to receive a conventional watch casing

and completely engulf same, thereby to give the appearance of a watch having the size, shape and styling of the mounting link. The link is formed with a loop member and means for detachably mounting a watch casing within the loop substantially in the same plane therewith. The lower surface of the loop member is curved upwardly to at least partially laterally expose the winding and setting mechanism on the watch at the underside of the mounting link. Means are provided externally of the loop member for securing the watch mounting link to the remaining connecting links of the bracelet.

The construction herein described provides a convenient means for substantially restyling and existing watch and coordinating same with the remaining bracelet links and other jewelry.

3,738,101

TIMEPIECE ESCAPEMENT LEVER

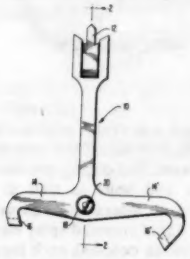
Andre Simon-Vermot, 2400 Le Locle, Switzerland, assignor to Les Fabriques d'Assortiments Reunies, Garadet, Neuchatel, Switzerland

Continuation-in-part of Ser. No. 52,093, July 2, 1970, Pat. No. 3,694,885. This application Sept. 21, 1972, Ser. No. 290,828

Claims priority, application Switzerland, July 11, 1969, 10608/69

Int. Cl. G04b *15/00*

U.S. Cl. 58—116 **12 Claims**



An escapement lever for a timepiece comprises a lever body including at one end a pair of divergent arms each carrying a pallet or pallet pin. The body is mounted on an arbor for oscillation with the pallets or pins cooperative with a toothed escapement wheel. The pallets or the pallet pins are coated with hard metal to increase wear, reduce fruction and to facilitate lubrication.

3,738,102

FUEL CONTROL FOR TURBINE TYPE POWER PLANT HAVING VARIABLE AREA GEOMETRY

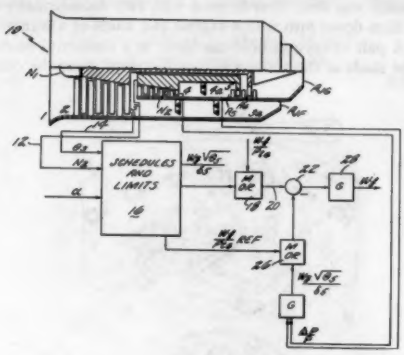
Charles F. Stearns, East Longmeadow, Mass., and Louis A. Urban, Granby, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed May 24, 1971, Ser. No. 146,372

Int. Cl. F02c *9/08*

U.S. Cl. 60—39.28 T **7 Claims**

The turbine inlet temperature of a turbine type of power plant, particularly the type that includes a variable geometry, is controlled by setting a referred weight flow of the power plant working medium and closing the loop through fuel flow so that the actual referred weight flow matches the set value. The ratio of the difference between the total pressure upstream of the burner and the static pressure downstream of the



burner to the total pressure upstream of the burner serves to produce a signal indicative of the actual weight flow of the power plant working medium.

3,738,103

POWER PLANT PROCESS

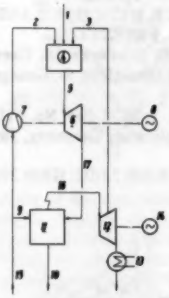
Paul Rudolph, Bad Homburg, and Ernst Kapp, Frankfurt am Main, both of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 24, 1970, Ser. No. 66,257

Claims priority, application Germany, Sept. 1, 1969, P 19 44 307.3

Int. Cl. F01k *25/08, 23/00, 23/10, 23/14*

U.S. Cl. 60—37 **4 Claims**



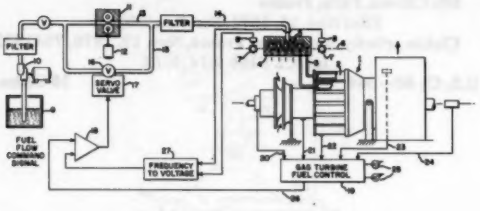
In a turbine power plant, fluid hydrocarbon fuel is first cracked with steam under pressure; the cracked compressed gas is then expanded in a gas turbine to perform work and thereafter burned in a boiler to generate steam to drive a steam turbine. The cracked, compressed gas may also be expanded to an intermediate pressure in a gas turbine to perform work, combusted under pressure, the combusted, compressed gas expanded in a second gas turbine to perform work and then fed to a boiler where the heat of the combusted gas is utilized to generate stem to drive a steam turbine. The cracked, compressed gas may also be fully expanded in a gas turbine to perform work and thereafter combusted and a portion of the hot combustion gas therefrom is fed to a boiler to generate steam to drive a steam turbine and the balance is recycled to an externally heated cracker and then to the boiler.

3,738,104

GAS TURBINE FUEL FLOW METERING CONTROL SYSTEM

Hugh E. Rosa, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed July 16, 1971, Ser. No. 163,353
Int. Cl. F02c 9/08, 9/10
U.S. Cl. 60—39.28 R 8 Claims



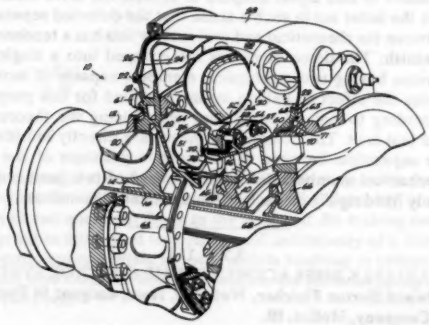
A "free-wheeling" flow divider actuated by pressure of the liquid fuel meters fuel to the separate combustion chambers of a gas turbine. The actual fuel flow rate is sensed by measuring the speed of a shaft turning several positive-displacement flow dividing elements and is compared to a desired total fuel flow command signal. The difference or error signal operates a servo mechanism to adjust fuel flow rate to the "free-wheeling" flow divider.

3,738,105

GAS TURBINE ENGINE STRUCTURE

Benno E. Buchelt, 9020 Klagenfurt, Austria, assignor to Avco Corporation, Stratford, Conn.

Filed June 24, 1971, Ser. No. 156,351
Int. Cl. F02c 7/20
U.S. Cl. 60—39.31 9 Claims



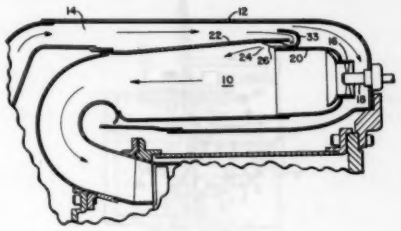
The disclosure illustrates a gas turbine engine structure in which a turbine housing is structurally connected to a compressor housing by three equally spaced straight-lined struts. These struts pass in between three scroll-like ducts that carry combustion gases to an annular turbine inlet duct radially inboard of the straight-lined struts. The direct structural connection permits closer blade tip clearances and a substantial increase in efficiency. In addition it provides a lightweight design.

3,738,106

VARIABLE GEOMETRY COMBUSTORS

Wolfgang J. Stein, Milford, and Jerry O. Melconian, Stratford, both of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Oct. 26, 1971, Ser. No. 192,437
Int. Cl. F02c 7/18
U.S. Cl. 60—39.23 9 Claims



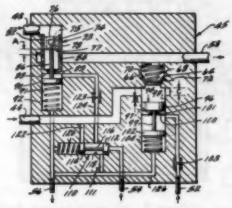
The combustion chamber for a gas turbine engine is constructed of a plurality of spaced telescoping sections, the gap between the sections providing an inlet for the introduction of cooling air. A flexible joint is provided between the overlapping portions of the telescoped sections permitting each section to expand and contract with low constraint. This results in a change in the size of the air inlet gap, and thus controls the amount of air introduced to the combustor under varying operating conditions. In one embodiment the joint comprises a plurality of circumferentially disposed flexible wiggle strips welded at one end to one section and at the other end to the other section. In another embodiment the joint takes the form of a plurality of circumferentially disposed flexible Z-section spacers.

3,738,107

FLOW MIXING SELECTOR VALVE

Franklin Elliott Miller, Cincinnati, Ohio, assignor to General Electric Company, Lynn, Mass.

Filed Jan. 21, 1972, Ser. No. 219,764
Int. Cl. F02k 3/10
U.S. Cl. 60—241 7 Claims



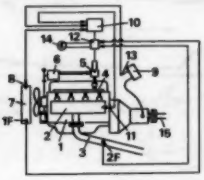
A flow mixing selector valve is provided to switch between low and high pressure fluids while maintaining a near constant flow rate of change by providing a brief transition period wherein the high pressure fluid may be gradually commingled with the low pressure fluid in ever increasing proportion until the low pressure fluid can be entirely cut off without unduly stressing components downstream of the mixing valve.

3,738,108

SAFETY DEVICE FOR AN ENGINE EQUIPPED WITH AN EXHAUST GAS PURIFIER

Kenji Goto; Norio Shibata, and Kiyohiko Mizuno, all of Suntogun, Shizuoka Pref., Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Feb. 9, 1971, Ser. No. 113,895
Claims priority, application Japan, Oct. 14, 1970, 45/90204
Int. Cl. F02b 75/10
U.S. Cl. 60—277 20 Claims



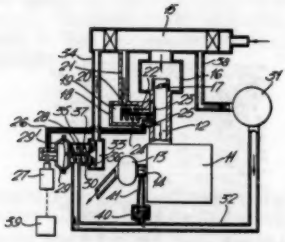
In an internal combustion engine equipped with an exhaust gas purifier adapted to be controlled based on the values of cooling water temperature, exhaust gas temperature and vehicle speeds detected by detectors, a safety device for the engine equipped with an exhaust gas purifier. Said safety device is characterized in that means is provided at least in a part in which temperature is elevated abnormally by abnormal operation condition of said internal combustion engine for rendering inoperative control means for said exhaust gas purifier when the elevated temperature reaches a predetermined level.

3,738,109

EXHAUST GAS PURIFYING SYSTEM

Yasuo Tatsutomi, and Shigetake Yoshimura, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima-ken, Japan

Filed Jan. 13, 1971, Ser. No. 106,092
Claims priority, application Japan, Jan. 14, 1970, 45/4112; Jan. 14, 1970, 45/4113
Int. Cl. F02b 75/10
U.S. Cl. 60—290 9 Claims



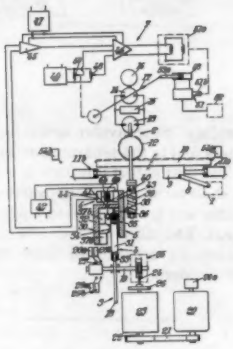
A system for purifying an exhaust gas of an internal combustion engine for controlling the flow of a primary air to be supplied to an inlet manifold to give a proper air-fuel mixture ratio in accordance with the opening of the throttle valve and for controlling the flow of a secondary air to be supplied to an exhaust manifold to enable the reactor to effect the reduction of unburned compounds present in the exhaust system in accordance with the vehicle driving condition. To this end, there is provided a relief valve operable in accordance with the opening of the throttle valve and concurrently in accordance with the engine speed.

3,738,110

DEVICE FOR DRIVING A PASSIVE ELEMENT ACCORDING TO A PREDETERMINED LAW OF MOVEMENT

Albert Grosseau, Chaville, France, assignor to S. A. Automobile Citroen, Paris, France

Filed Nov. 15, 1971, Ser. No. 198,626
Claims priority, application France, Nov. 19, 1970, 7041522
Int. Cl. F15b 9/14, 9/17
U.S. Cl. 60—368 10 Claims



The device comprises drive means adapted to move the passive element; programming means adapted to apply a theoretical law of movement to the passive element; detector means for the theoretical movement and detector means of the actual motion; comparator means adapted to deliver a signal depending on the separation existing between the theoretical and real movements detected by the said detector means; and means sensitive to said signal adapted to actuate the drive means so that the latter act in such a sense that the detected separation between the theoretical and real movements has a tendency to diminish. The detector means are grouped into a single apparatus having two mechanical members capable of moving, under the effect of linking means provided for this purpose, according to laws of movement reproducing the theoretical and real laws. The comparator means are directly sensitive to the separation between the respective positions of the two mechanical members and are composed of two parts respectively fixed rigidly on each of the mechanical members.

3,738,111

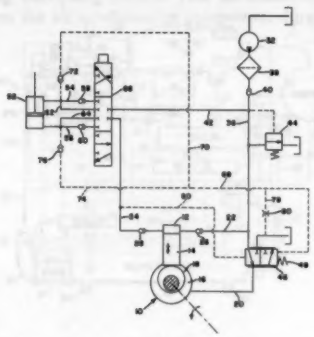
VARIABLE DISPLACEMENT PUMP CONTROL SYSTEM

Edward Horton Fletcher, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Nov. 11, 1971, Ser. No. 197,699
Int. Cl. F04b 49/00
U.S. Cl. 60—452 9 Claims

A radial piston variable displacement hydraulic pump has a discharge line and an inlet line, which is connected to a fixed displacement charge pump. The pistons are returned by the fluid pressure in the inlet line, and the displacement of the pump is controlled by varying the pressure in the drive chamber of the pump, increasing pressure in the drive chamber resisting the return of the pistons to decrease the piston strokes. The pressure in the chamber is supplied by the charge pump through a pilot-operated stroke control valve,

which is biased toward a dump position, wherein it exhausts the pressurized fluid from the chamber, and is shiftable to an



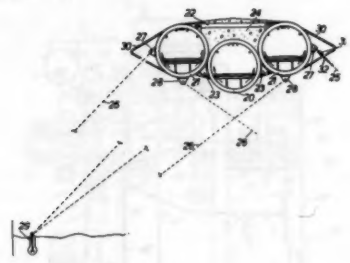
alternate position wherein it connects the charge pump to the chamber in response to pressure in a pilot line connected to the pump discharge.

3,738,112

BRIDGING OR SPANNING OF BODIES OF WATER

Alan Barnett Grant, Coulsdon, Surrey, and Ralph Sherman, Esher, both of England, assignors to Alan Grant & Partners, Cabham, Surrey, England

Filed Feb. 10, 1971, Ser. No. 114,319
Int. Cl. E01g *1/00*
U.S. Cl. 61—43 **2 Claims**



A means of spanning rivers and other stretches of water is provided in which a buoyant pipe or tube assembly is employed and anchored down to the river bed. By making use of large tubes fabricated in sections and individually of a diameter sufficient to contain a motor vehicle roadway or railroad, a tunnel type road/rail link may be achieved without cutting into the river bed.

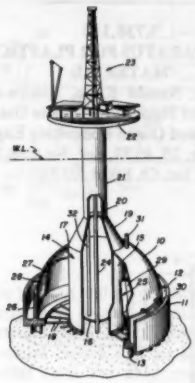
3,738,113

OFFSHORE OIL STORAGE STRUCTURE WITH SUBMERGENCE SHELL

James Victor Madary, and William A. Davis, both of Glen Ellyn,, Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Oct. 14, 1971, Ser. No. 189,227
Int. Cl. E02b *17/00*; B65d *89/10*
U.S. Cl. 61—46.5 **14 Claims**

An offshore structure floatable to a site for positioning on the floor of a body of water having a roof shell enclosing a volume therebelow, said roof shell having a peripheral ballasting ring, a conduit to remove air from beneath the roof shell and supply the same with liquid in submerging the structure, a submergence shell joined at its bottom to the roof shell and extending upwardly spaced away from the roof shell thereby defining a material well between the submergence shell and the roof shell, a plurality of partitions dividing the material well into compartments, means to supply ballasting material



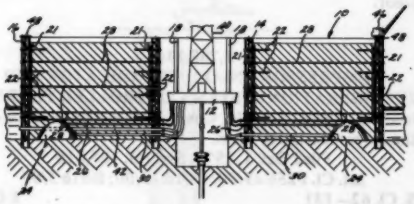
to, and remove it from, the material well, at least one hollow vessel joined to the roof shell, said hollow vessel being of such size that the buoyancy of the vessel will statically float the roof shell above the floor of a body of water partly or fully submerged at least with all air removed from beneath the roof shell and with the material well full of ballasting material and means to supply ballasting material to, and remove it from, the hollow vessel.

3,738,114

METHOD AND APPARATUS FOR FORMING ICE ISLAND FOR DRILLING OR THE LIKE

Gilbert H. Bishop, 2140 Tulane Avenue, Long Beach, Calif.

Filed Nov. 1, 1971, Ser. No. 194,125
Int. Cl. E02d *19/04, 23/08*; F25d *1/00*
U.S. Cl. 61—46.5 **15 Claims**



A method and apparatus for forming an ice island in cold geographical regions to recover resources such as oil from areas normally covered with ice, frozen muskeg or the like in the winter. In one embodiment an oil drilling barge is moved to an offshore drill site during a thaw period and allowed to be frozen in at the onset of winter. Concentric, spaced apart walls are constructed about the barge and water is pumped into the area between the walls, frozen, and the cycle repeated a number of times until the weight of built-up ice causes the walls to sink gradually through the pack ice and eventually to

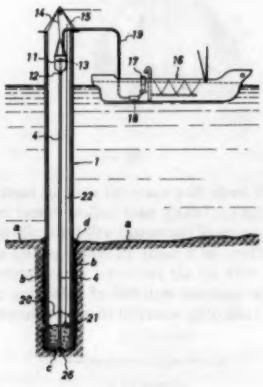
the ocean bottom. The barge is next secured to the inner wall to serve as a drilling platform. Ice and water within the inner wall is removed and drilling proceeds. During seasonal thaws refrigeration equipment is utilized to keep the ice island in a frozen condition. When the ice island is to be moved to another drill site, air is introduced beneath the ice island, and the upper layers of ice are thawed, scraped away and dumped over the side during a thaw period unitl the lightened, buoyed island floats off the ocean bottom. It is towed to the new drill site, built up again, and sunk as before.

3,738,115

METHOD AND APPARATUS FOR PLASTIC HYDRAULIC MATERIAL

Giichi Inoue, Osaka; Naoshi Kubo, Ashiya-shi, and Shogo Hatano, Osaka, all of Japan, assignors to Osaka Cement Co., Ltd.; Naoshi Kubo and Osaka Consulting Engineers, Ltd.

Filed Mar. 28, 1972, Ser. No. 238,795
Int. Cl. E02d *5/32*
U.S. Cl. 61—63 **6 Claims**



Method and apparatus for placing hydraulic material through watertight flexible tubes onto the bottom of a steel column, in which said apparatus consists of watertight flexible tubes for transferring said hydraulic material; supporting pipes holding said tubes therein and having apertures on the wall portions; and a steel column holding said pipes therein and receiving the transferred hydraulic material onto the bottom thereof.

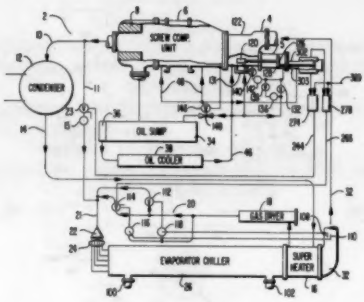
3,738,116

COMPRESSOR UNLOADER INDICATOR AND REFRIGERATION SYSTEM CONTROLLED THEREBY

Edward S. Gazda, Suffield, Conn., assignor to Dunham-Bush, Inc., West Hartford, Conn.

Filed Oct. 1, 1971, Ser. No. 185,618
Int. Cl. F25b *49/00*; G01d *13/00*; H01h *3/00*
U.S. Cl. 62—131 **8 Claims**

A fluid motor operates a reciprocating slide valve for unloading a screw type compressor. The reciprocating valve has a rod extending therefrom exterior of the motor housing which reciprocates within a cylindrical inner tube formed of non-magnetic material. A permanent magnet is affixed to the end of the rod, and a ring-shaped magnetic follower slides freely on the outside of the inner tube and follows the permanent magnet on the rod by magnetic attraction between the same. A larger diameter outer tube concentrically surrounds the inner tube and is spaced slightly therefrom. A clear transparent window on the outer tube allows viewing of the follower while a scale permanently fastened to the outer tube indicates the relative load-unload position of the compressor slide valve. Longitudinal grooves within the outer tube carry at spaced locations multiple groups of reed switches which are electrically coupled to the refrigeration control system. These



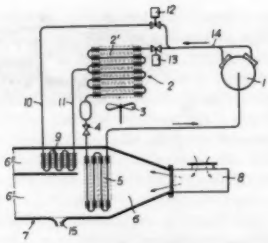
switches are responsive to the position of the follower to control one or emore valves which in turn control the refrigerant flowing through the refrigeration system.

3,738,117

AIR CONDITIONER FOR RAILROAD VEHICLES

Ignaz Engel, Vienna, Austria, assignor to Alex. Friedmann Kommanditgesellschaft, Vienna, Austria

Filed Oct. 6, 1971, Ser. No. 187,096
Claims priority, application Austria, Oct. 6, 1970, 9019/70
Int. Cl. F25b *29/00*
U.S. Cl. 62—173 **1 Claim**



An air conditioner for railroad vehicles, comprising an air-impinged heating and cooling assembly the cooling system of which includes a coolant evaporator arranged in the air current and a blower-cooled condenser, wherein an additional condenser serving as a booster heater is provided in the air current behind the evaporator in such a manner as to be insertable in the cooling system via a valve system, the additional condenser by-passing at least part of the condenser of the cooling system.

3,738,118

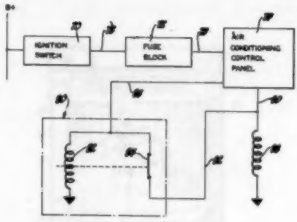
MEANS FOR LUBRICATING VEHICLE AIR CONDITIONING COMPRESSOR SHAFT SEALS

James W. Jacobs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 31, 1972, Ser. No. 221,938
Int. Cl. B60h *3/04*
U.S. Cl. 62—192 **3 Claims**

A vehicle air conditioning control system including means for lubricating seals such as compressor shaft seals during pro-

longed cold weather vehicle use when air conditioning is not required. A momentarily closed relay, responsive to use of the vehicle, is connected in the air conditioning electrical control circuitry in a current path independent of the normal air conditioning energizing circuit. This momentarily closed relay energizes the air conditioning compressor during each use of



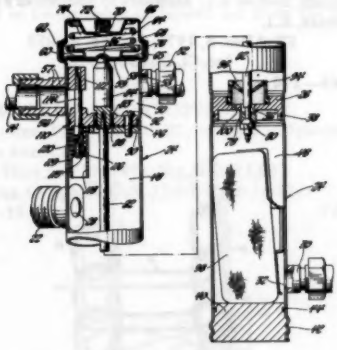
the vehicle for time period sufficient for proper lubrication of compressor shaft seals but sufficiently short to prevent cooling during cold weather. Lubrication of the seals during each use maintains a thin film of lubricant between rotating and non-rotating faces of the seal preventing frictional heating of the seal faces and consequent damage that would prevent the faces from supporting the necessary sealing lubricant film.

3,738,119

HEAD PRESSURE OPERATED SUCTION THROTTLING VALVE

Carl A. Scherer, Clarence Center, and Dale W. Lawson, Lockport, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed July 23, 1971, Ser. No. 165,535
Int. Cl. F25b *41/04*
U.S. Cl. 62—217 **3 Claims**



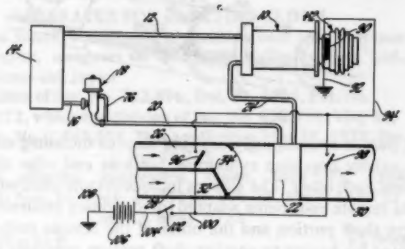
Refrigerating apparatus for an automobile air conditioning system including a pressure responsive expansion valve which opens to admit refrigerant to the evaporator in response to decreasing evaporator pressure for maintaining the evaporator pressure above a minimum level to prevent frost accumulation. A flow restricting throttling valve which is normally open, moves toward a closed position in the evaporator outlet to maintain evaporator pressure when head pressure downstream from the condenser falls to a predetermined level. Because changes in head pressure are proportional to changes in ambient temperature, the restriction of the evaporator outlet with decreasing head pressure permits the system to be operated at lower ambient temperatures without evaporator pressures falling below the frost formation level.

3,738,120

AUTOMOTIVE REFRIGERANT SYSTEM

Paul K. Beatenbough, Medina, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 17, 1972, Ser. No. 227,029
Int. Cl. F25b *1/00*
U.S. Cl. 62—229 **3 Claims**



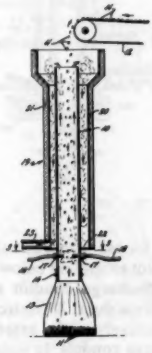
An automobile heating and air conditioning system having a refrigerant compressor rotated by an automobile engine through an electromagnetic clutch which is controlled by an ambient temperature switch and an air outlet temperature switch downstream from the evaporator. The switches are connected in parallel between the automobile battery and the electromagnetic clutch to independently energize the clutch and initiate operation of the compressor. The ambient switch is set to close at about 65° F. while the air discharge switch closes at about 32° F. This causes the air conditioning system to be inoperative when the ambient temperature is below 32° F. and to run continuously when the ambient temperature is above 65° F. The compressor cycles off and on when the ambient temperature is between 32° F. and 65° F. to prevent frost accumulation on the evaporator.

3,738,121

TEMPERATURE MODIFYING APPARATUS USING EXPENDABLE REFRIGERANT

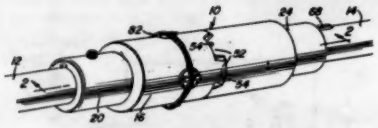
Park T. Swindell, Villa 92, Imperial Southgate, Lakeland, Fla.

Filed Nov. 12, 1971, Ser. No. 198,293
Int. Cl. F25d *25/00*
U.S. Cl. 62—378 **4 Claims**



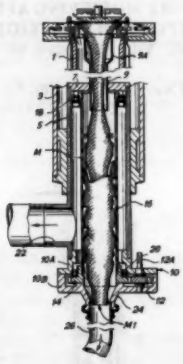
Apparatus which uses an expendable gaseous refrigerant in counterflow heat exchange relationship with a product freely falling by gravity generally axially of a refrigerating chamber for individually quick freezing the product.

3,738,122
TORQUE COUPLER
Tom E. Ricks, 4306 Durango, Odessa, Tex.
Filed Aug. 24, 1971, Ser. No. 174,367
Int. Cl. F16d 7/00
U.S. Cl. 64—29 8 Claims



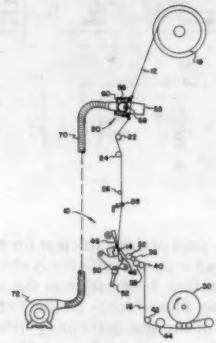
A pair of telescopingly engaged sleeves including concentric axially opposing cylindrical portions end edge abutted against each other. The sleeves include remote ends with one of the remote ends being adapted for stationary securement to a first shaft portion and the other of the remote ends being adapted for keying to another shaft portion generally axially aligned with the first shaft portion and for rotation with an axial shifting relative to the other shaft portion. The abutting end edges of the cylindrical portions includes circumferentially spaced coacting cam lobes for camming the opposing cylindrical portions axially apart in response to relative rotation of the sleeves and a central spring is connected between the sleeves and yieldingly biases the latter toward further telescopingly engaged positions and with the opposing cylindrical portions thereof in end abutted relation.

3,738,123
PNEUMATIC KNIT FABRIC TENSIONING DEVICES FOR USE WITH CIRCULAR KNITTING MACHINES
Aramis Mazzi, Florence, Italy, assignor to Solis S.I.L., Firenze, Italy
Filed July 14, 1969, Ser. No. 841,418
Int. Cl. D04b 15/92
U.S. Cl. 66—149 S 6 Claims



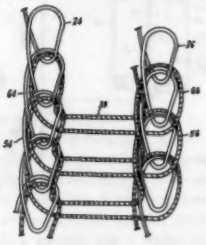
A tensioning device for use with a circular knitting machine includes a perforate duct extending below the needle cylinder and an imperforate discharge conduit extending from the lower end of the perforate duct. A control valve enables suction to be applied selectively to the exterior of the perforate duct and to the discharge conduit. In operation suction is applied initially to the discharge conduit until the leading end of a stocking enters the discharge conduit. The suction is then applied to the perforate duct and the stocking is thereby made to cling to the internal surface. When the stocking is completed suction is once again applied to the discharge conduit by the control valve.

3,738,124
KNITTING MACHINE STOP MOTION
Leslie E. Reynolds, Greenville, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed Apr. 8, 1971, Ser. No. 132,351
Int. Cl. D04b 35/12
U.S. Cl. 66—163 1 Claim



Method and apparatus to detect a yarn break in a knitting machine by blowing the broken end from the warp sheet into the view of a photoelectric detection system which will stop the knitting machine when the broken end is detected.

3,738,125
THREE-STRAND KNITTED YARN
Robert C. Blezard, Woonsocket, and William E. Millard, North Providence, both of R.I., assignors to Smithfield Fibers, Inc., Providence, R.I.
Filed Dec. 8, 1970, Ser. No. 96,059
Int. Cl. D04b 1/00
U.S. Cl. 66—170 8 Claims



A knitted yarn and a method and apparatus for knitting the yarn. The yarn comprises three strands arranged as two interlocked chains. Stitches in the first chain comprise first and second strands while stitched in the second chain comprise the second and third strands.

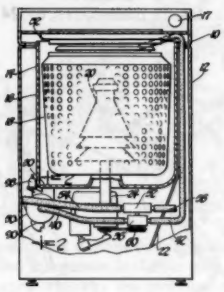
Stitches in the first and second strands are formed about one reciprocating latch needle and stitches in the second and third strands are formed about a second parallel reciprocating latch needle. Each needle pulls a newly formed stitch through a preceding stitch and casts-off the preceding stitch.

3,738,126

SELF-CLEANING LINT FILTER FOR A CLOTHES WASHER

Roy R. Smith, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 27, 1971, Ser. No. 211,970
Int. Cl. D06f *29/00*; B01d *35/16*
U.S. Cl. 68—18 F 4 Claims



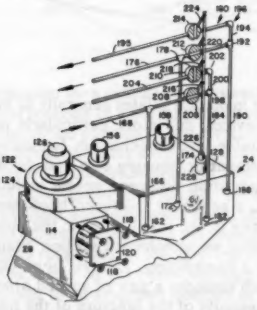
A self-cleaning lint filter for a domestic clothes washer is connected between a water container and a pair of reversible pumps. The lint filter includes a drum-shaped housing having an inlet and two outlets. A rotatable and axially shiftable disc in the housing is covered with pointed fingers projecting from one side thereof. When the first pump operates, the disc is axially shiftably drawn in one direction to place the finger points against a wall of the housing to form a maze surrounding one of the outlets for entrapping lint from liquid pumped from this outlet. In conjunction with operation of the second pump, the disc is axially shiftably planed in the opposite direction to space the finger points from the wall. A tangential arrangement of the other of said outlets and the inlet with respect to the housing facilitates rotation of the disc as an aid in planing the disc and in centrifuging entrapped lint from the fingers thereon.

3,738,127

DRY CLEANING RECOVERY UNIT

Robert F. Hyams, Santa Ana, Calif., assignor to Systemation, Inc., Santa Ana, Calif.

Filed Jan. 29, 1971, Ser. No. 111,047
Int. Cl. D06f *43/08*, *25/00*; F26b *21/12*
U.S. Cl. 68—18 C 3 Claims



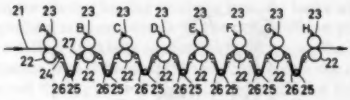
A dry cleaning liquid recovery unit which can be used integrally with a dry cleaning system, or as a separate stripping, drying and recovery unit to effectuate liquid recovery and rapid drying of fabrics and clothes placed therein without creasing. The recovery unit has an improved thermal heating unit which can be converted to a cooling unit for cooling the circulating air which allows the garments or fabrics in the recovery unit to be cooled down prior to removal and extended piling thereof.

3,738,128

APPARATUS FOR TREATING CLOTH

Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama-ken, Japan, assignors to Sando Iron Works Co., Ltd., Wakayama-shi, Japan

Division of Ser. No. 782,890, Dec. 11, 1968, Pat. No. 3,606,772, which is a division of Ser. No. 638,971, May 16, 1967, Pat. No. 3,545,054. This application May 18, 1970, Ser. No. 48,745
Claims priority, application Japan, May 23, 1966, 41/32872; Nov. 24, 1966, 41/77123; Feb. 15, 1967, 42/9732
Int. Cl. B05c *3/178*
U.S. Cl. 68—22 R 2 Claims



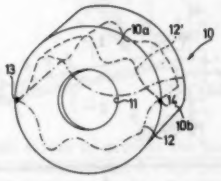
Apparatus for treating cloth is comprised of a pair of rollers, with at least one of the rollers having grooves formed in its circumferential periphery. The grooves may extend in parallel relationship with or transversely to the axis of the roller. Preferably, the grooved roller is formed of a hard substance and the other roller of a relatively softer substance whereby when the cloth is passed between the two, the grooves in the grooved roller exert a lateral tensioning effect on the cloth. Further, the rollers may be arranged in combination with solution tanks for passing the cloth through the tanks and concurrently laterally and longitudinally tensioning the cloth.

3,738,129

DRUM HAVING DISPLACEABLE TEXTILE WEB PARTITION MEANS

Erwin Biesinger; Lothar Kostorz, both of Rottenburg, and Karl Sohnchen, Lohmer/Siegkreis, all of Germany, assignors to Seco Maschinenbau GmbH & Co. KG., Rottenburg/Neckar, Germany

Filed Nov. 23, 1971, Ser. No. 201,478
Claims priority, application Germany, Nov. 28, 1970, P 20 58 704.6
Int. Cl. D06f *37/08*; B23p *19/04*
U.S. Cl. 68—145 10 Claims



A drum for washing and drycleaning machines has a circumferential wall surrounding its axis of rotation, and a pair of

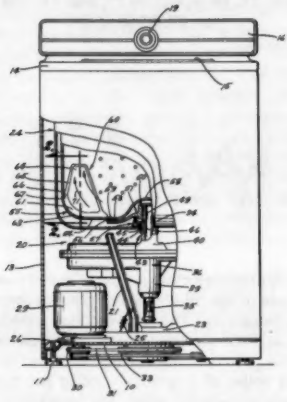
axially spaced end walls one of which is provided with a central access opening. At least one partition in form of a strip of fabric, netting or the like is loosely suspended in the drum, having a length greater than the diameter of the drum and having its opposite end portions secured to the drum at traversely spaced locations at opposite sides of the axis of rotation. Additional similar partition webs may be provided each having an end portion secured to the inner side of the circumferential drum wall and another end portion secured to the first-mentioned partition web.

3,738,130

OSCILLATABLE TUB FOR WASHING MACHINE

Thomas R. Smith, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Mar. 9, 1972, Ser. No. 233,155
Int. Cl. D06f *37/14*
U.S. Cl. 68—154 **12 Claims**



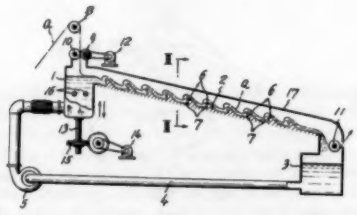
An oscillatable tub for a washing machine includes a pair of blades attached eccentrically to and oscillatable with the tub for effecting a washing action. In a preferred embodiment the blades are flexible to enhance the movement of the washing fluid and articles contained therein.

3,738,131

APPARATUS FOR TREATMENT OF CLOTH

Yoshio Inomata, Gifu, and Yukiyoshi Kawaguchi, Kyoto, both of Japan, assignors to Kabushiki Kaisha Ichikin Kogyosha, Kusatsu-shi, Shiga-ken, Japan

Filed Mar. 2, 1971, Ser. No. 120,163
Claims priority, application Japan, Aug. 14, 1970, 45/70796
Int. Cl. B05c *3/134*
U.S. Cl. 68—177 **7 Claims**



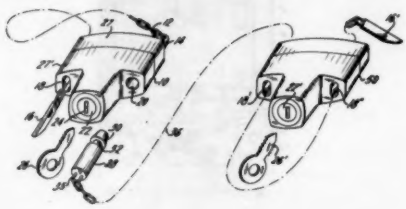
An apparatus for treatment of cloth comprises an inclined trough for liquid flow with spaced ridges along the bottom thereof to provide waves in the liquid. A cloth is spread out on the liquid and is floated downwardly on the flowing liquid under no tension and the cloth is treated by the massage action by the waves in the liquid.

3,738,132

CHAIN LOCK

Alice R. Nagel, 68-01 60th Road, Maspeth, N.Y.

Continuation-in-part of Ser. No. 842,206, July 16, 1969, Pat. No. 3,585,823. This application June 21, 1971, Ser. No. 154,875
Int. Cl. E05b *67/18, 67/24*
U.S. Cl. 70—49 **5 Claims**



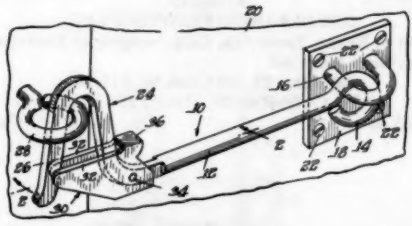
A chain lock arrangement with a housing having either one passage for the chain or one passage for the chain and one passage for a locking plug or two passages for the chain and at least one latch bolt in the housing to automatically lock the chain in the housing upon inserting the same into the passage, or two latch bolts, one to lock the chain and the other to lock the chain or plug, and a lock cylinder in the housing, operable for unlocking the latch bolts.

3,738,133

SAFETY GATE HOOK

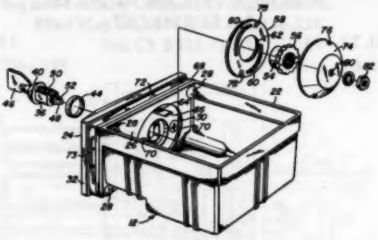
Robert L. Newlon, Tampico, Ill., assignor to Lawrence Brothers, Inc., Sterling, Ill.

Filed July 20, 1972, Ser. No. 273,432
Int. Cl. E05c *19/12*
U.S. Cl. 70—108 **6 Claims**



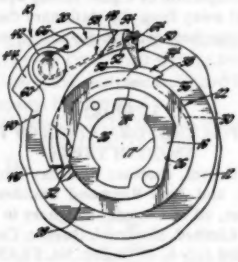
The present invention relates generally to improvements in safety hook devices, and more particularly to a novel automatically operable latch mechanism for preventing inadvertent disengagement or opening of a gate hook. The embodiment of the invention disclosed herein includes an elongate shank section, a generally U-shaped hook section supported by one extremity of the shank section, the opposite extremity thereof including an attachment section adapted for pivotal coupling with a fixed fitting. A novel hook latching means is disclosed which includes a pair of spaced arms pivotally supported in the vicinity of the juncture of the hook section with the shank section. When in latching position, the spaced free extremities of the latching means superimpose the hook section. Novel abutment members limit the degree of pivotal movement of the latching means in opposite directions.

3,738,134
LOCK BOX CONSTRUCTION
Mitchell A. Hall, Ft. Thomas, Ky., assignor to Monarch Tool & Manufacturing Company, Covington, Ky.
Filed Feb. 1, 1971, Ser. No. 111,287
Int. Cl. E05b *15/16, 65/46*
U.S. Cl. 70—86 16 Claims



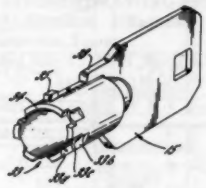
The lock box comprises a money receptacle upon which is detachably mounted a separate lockable face member carrying suitable bolt-work whereby the lock box may be secured within a vault opening or the like. The lockable face member is made as a universal part which is receptive of various kinds or styles of locks to control the bolt-work, and provision is made for changing or substituting locks without removing the money receptacle from the lockable face member; and further, the bolt-work is made to very simply avoid rattle or looseness of the lock box in the vault opening.

3,738,135
GATING MECHANISM FOR CYLINDER LOCK ASSEMBLY
Edward H. Seidewand, Rochester, N.Y., assignor to General Motors Corporation, Detroit, Mich.
Filed May 15, 1972, Ser. No. 253,316
Int. Cl. E05b *15/00*
U.S. Cl. 70—362 3 Claims



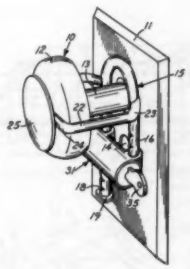
A gating mechanism for a cylinder lock assembly adapted to positively prevent rotation of a barrel portion of the assembly beyond a predetermined position in one direction relative to a cylinder portion of the assembly except after momentary rotation of the barrel from the predetermined position in the opposite direction, the gating mechanism including a pawl pivoted on the cylinder and engageable on an abutment on the barrel to prevent rotation beyond the predetermined position, a follower pivotally supported on the pawl and biased toward a retracted position, a cam on the barrel having a lip portion for moving the follower to an extended position in which the follower pivots the pawl into a position engageable on the abutment, and a friction surface on the cam engageable on the follower for pivoting the latter back to the retracted position in response to momentary rotation of the barrel in the opposite direction.

3,738,136
SYSTEM FOR MASTER KEYING AXIAL PIN TUMBLER LOCKS
Morris Falk, Palm Springs, Calif., assignor to Fort Lock Corporation, Chicago, Ill.
Filed June 6, 1972, Ser. No. 260,162
Int. Cl. E05b *15/14, 27/08, 35/10*
U.S. Cl. 70—363 8 Claims



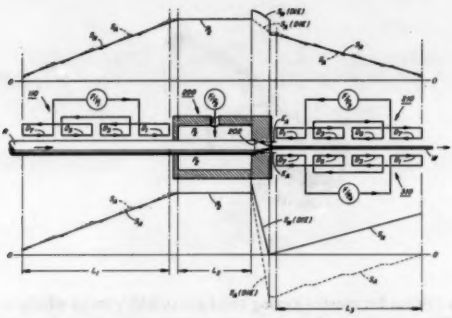
A system for master keying axial pin tumbler locks which includes providing at least certain of the combination pins with at least two different axially spaced surfaces facing the keyway for cooperating with differently shaped notches in the end of a key advanced through the keyway. In its preferred form, the master keying combination pins are stepped so as to form a cylindrical head portion of relatively small diameter and a base portion of a larger diameter and the keys include stepped notches that permit engagement with either the head portion or the base portion of said combination pin so as to permit two different keys to operate the same pin. The system described may be adaptable to grandmaster keying, great grandmaster keying, etc., as well as master keying.

3,738,137
DOORKNOB LOCKING DEVICE
Ivan R. Jones, 1053 West Shepperd Avenue, Littleton, Colo.
Filed Apr. 21, 1971, Ser. No. 136,100
Int. Cl. E05b *17/14*
U.S. Cl. 70—428 4 Claims



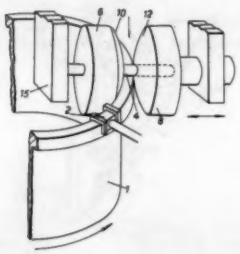
A locking device serves to prevent the insertion of a key into a keyhole on a doorknob and for this purpose includes a hasp which straddles the narrowed neck of the doorknob and an outer guard supported by the hasp overlies the keyhole to prevent insertion of a key. A lock member, preferably of the tumbler type, closes the open end of the hasp to keep the guard over the keyhole and prevent its removal from the doorknob and is movable along the hasp to a selected position.

3,738,138
CONTINUOUS MATERIAL FEEDING AND DEFORMATION PROCESS
Francis J. Fuchs, Jr., Princeton Junction, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.
Division of Ser. No. 876,940, Nov. 14, 1969, Pat. No. 3,667,267. This application Oct. 4, 1971, Ser. No. 186,375
Int. Cl. B21c 31/00
U.S. Cl. 72—60 11 Claims



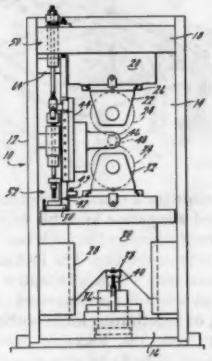
Disclosed herein is a process in which flowing fluids are utilized to apply viscous drag forces to a rod of indefinite length and advance it continously through an extrusion die, to produce a continuous product, for example, a wire. The flowing fluids also control the axial and radial stresses in the rod, sealing it into and out of treating environment so that undesirable rod pinch-off, bulging, or tension failure is avoided. The temperature, and hence-viscosity of the flowing fluids may be adjusted to control viscous drag forces.

3,738,139
METAL WORKING
William Alfred Proops, and Stuart Apsley Bridges, both of Bristol, England, assignors to Secretary of State for Defence in Her Brittanic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
Filed Aug. 3, 1971, Ser. No. 168,693
Claims priority, application Great Britain, Aug. 4, 1970, 37,658/70
Int. Cl. B21h 1/00
U.S. Cl. 72—69 5 Claims



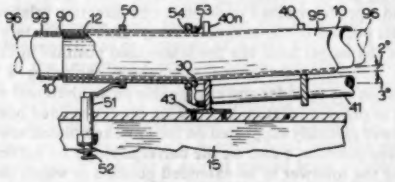
A method of increasing the thickness of a zone of a thin-walled metal member of circular cross-section comprising: heating the metal in the zone to a temperature at which it can be plastically deformed, and applying axial force to the metal in the zone by a first surface which makes rolling engagement with the member and which moves relatively to the member around the circumference of the member, while also applying radial restraint by further surfaces which make rolling engagement with the member so as to locate the thickened metal relatively to the remainder of the member.

3,738,140
GEAR ROLLING MACHINE
Carl H. Motz; Russell W. Anthony, both of Harper Woods, and George C. Peterson, Grosse Pointe Park, all of Mich., assignors to Lear Siegler, Inc., Santa Monica, Calif.
Filed July 6, 1971, Ser. No. 159,733
Int. Cl. B21h 5/02
U.S. Cl. 72—94 11 Claims



A gear rolling machine comprising a frame, a stationary die support on the frame for a gear rolling die, a work support slidable on said frame toward and away from said stationary die support, and a movable die support mounted on the frame for movement toward and away from the stationary die support and parallel to the movement provided for the work support. Yieldable means, such for example as a spring, counterweight, fluid pressure, or the like, are provided urging the work support toward the stationary die support. The movable die support is connected by lost motion means, preferably associated with yieldable means, to the work support and operates after completion of a gear rolling operation to move the work support away from the stationary die support into a clearance condition between the die and a work gear on the work support.

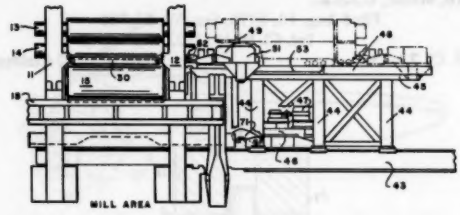
3,738,141
APPARATUS FOR THE FORMATION OF TUBES FROM SMOOTH TAPES
Rama Iyengar, Dorval, Quebec; Bretislav Paul Zuber, Montreal, Quebec, and Jean Raymond Boucher, Chateauguay Center, Quebec, all of Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada
Filed July 6, 1970, Ser. No. 52,434
Int. Cl. B21d 5/08
U.S. Cl. 72—176 7 Claims



A method and apparatus for forming a tube from a continuous tape of form retaining material, in which a tape is moved longitudinally in a straight path from a flat to a transversely

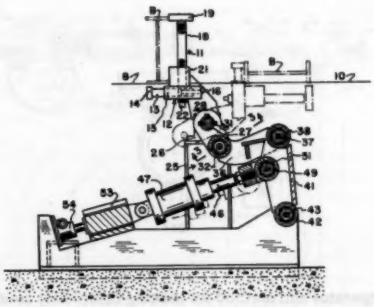
circular configuration and after the lateral edges of the tape have substantially closed the resulting tube is stressed in substantially inverse proportion to the stress imparted to the tape in forming the tube.

3,738,142
ROLLING MILL
James Richard Adair, Pittsburgh, Pa., assignor to United Engineering and Foundry Company, Pittsburgh, Pa.
Filed May 24, 1971, Ser. No. 146,228
Int. Cl. B21b *31/08*
U.S. Cl. 72—239 **9 Claims**



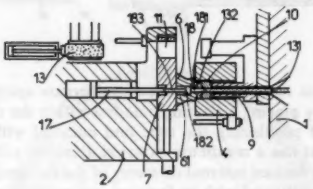
The present disclosure relates to an apparatus for allowing the rolls of a rolling mill to be quickly removed from and replaced into the mill stand. It provides a pair of bars for interconnecting the opposite bearing chocks of one of the rolls, all four elements of which are provided with wheels. The wheels are supported by two pivotal rails that extend between the housings of the mill. The rails during operation of the mill are positioned away from the bars, but, when the rolls are to be changed, they are positioned under the bars. The rolls are received in front of the mill by a side shifter having three discrete and spaced-apart support areas that support two roll-carrying platforms. Because of the spacing of the areas, the platforms have movable liners that span the spaces. A central area is movable axially of the mill for removing both the work rolls and the backup rolls from a position in front of the mill to a position remote relative thereto.

3,738,143
ADJUSTABLE BEAM TURN-UP AND BEAM TURN-DOWN ARMS FOR COOLING BED SERVICE
John A. Orris, Mars, Pa., assignor to United Engineering and Foundry Company, Pittsburgh, Pa.
Filed July 19, 1971, Ser. No. 163,846
Int. Cl. B21b *39/20*
U.S. Cl. 214—1 QG **4 Claims**



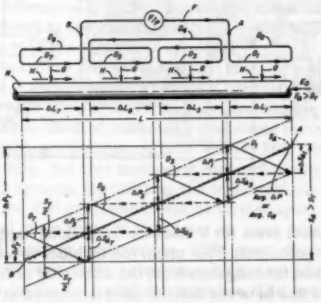
The disclosure of this invention relates to a beam rotating device as used in a rolling mill operation in the production of steel beams. In the illustrated form a beam to be rotated is received and supported by one of two supporting arms, which arm is located in a horizontal position. The arms are tied together so that on rotation of 90°, the beam is transferred to the second arm from the first arm. The arms are formed of threaded shafts having collared ends. By rotating the shafts the collared ends can be moved into a supporting position with supportable portions of a beam, even though the beams may vary in size, within the range of the adjustment allowed by the threaded shafts.

3,738,144
INVERSE DRAWING PRESSES
Michel Doudet, Chatillon S/Bagneux, France, assignor to SECIM, Courbevoie, France
Filed July 12, 1971, Ser. No. 161,721
Int. Cl. B21c *23/00*
U.S. Cl. 72—255 **2 Claims**



An inverse drawing press has a movable cross-member and a fixed cross-member which carries the die. The movable cross-member carries a bottom for a container moved over the die and receiving the ingot. A punch carried by the bottom for the container separates the end of the bar in the die from the shoe and shear cuts off the shoe. A ram removes any residual metal from the container.

3,738,145
APPARATUS AND METHOD FOR CONTINUOUS MATERIAL FEEDING AND DEFORMATION PROCESS
Francis J. Fuchs, Jr., Princeton Junction, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.
Division of Ser. No. 876,940, Nov. 14, 1969, Pat. No. 3,667,267, and a continuation-in-part of Ser. No. 794,488, Jan. 28, 1969, abandoned. This application Mar. 1, 1971, Ser. No. 119,909
Int. Cl. B21c *33/00*
U.S. Cl. 72—270 **105 Claims**



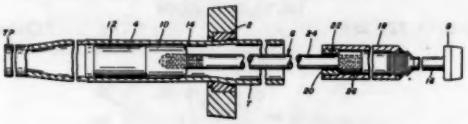
Disclosed herein is a process in which flowing fluids are utilized to apply viscous drag forces to a rod of indefinite length and advance it continuously through an extrusion die, to produce a continuous product, for example, a wire. The flowing fluids also control the axial and radial stresses in the rod, sealing it into and out of a treating environment so that un-

desirable rod pinch-off, bulging, or tension failure is avoided. The temperature, and hence viscosity, of the flowing fluids may be adjusted to control viscous drag forces.

3,738,146
METHOD AND APPARATUS FOR COLD WORKING SEAMLESS TUBES

William J. Gunn, Gary, Ind., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Nov. 17, 1970, Ser. No. 90,248
Int. Cl. B21c *1/24*
U.S. Cl. 72—283 **3 Claims**

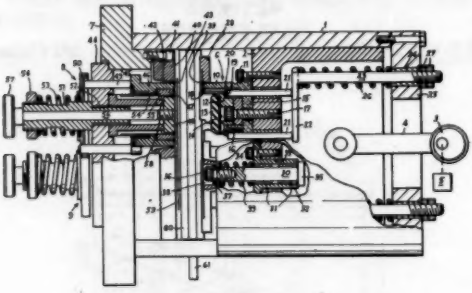


A seamless tube is cold worked to decrease spiral internal variations by placing a floating mandrel within the tube to be worked and positioning the tube and mandrel within a die. The mandrel has a maximum external diameter substantially equal to the desired internal diameter of the finished tube and is initially positioned with its forward end within the die. The tube is then pulled through the die where its outer and inner diameters are reduced to sizes less than the outer and inner diameters of the finished tube. The initial movement of the tube causes the floating mandrel to move entirely through the die. Continued movement of the tube places the tube in tension and expands its inside diameter as it passes over the mandrel.

3,738,147
CAP MAKING MACHINES

Geoffrey Ewart Ford, Bedford, and Philip Sidney Waite, Kempston, both of England, assignors to Fords (Finsbury) Limited, Kempston, Bedford, England

Filed June 28, 1971, Ser. No. 157,317
Int. Cl. B21d *45/00*
U.S. Cl. 72—344 **7 Claims**

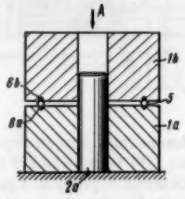


A twin-tool press for a machine for making caps for bottles and other containers from metal foil includes two tool sets for blanking and forming caps from the same strip of foil arranged so that the line between their centers is inclined at an angle of about 60° to the longitudinal axis of the strip. The blanks simultaneously cut by the two tools therefore form two rows down the length of the strip. The two tools sets comprise two punch assemblies carried on a horizontally reciprocating plunger and co-operating, stationary, die assemblies. The metal foil strip is intermittently fed between the assemblies and the plunger is reciprocated so that the assemblies co-operate to effect blanking and forming operations during the periods when the foil is stationary. The caps are retained inside the punches as the plunger retracts after a blanking and forming operation and the punch assemblies include ejector rings for ejecting the caps from within the punches. The ejector ring of the upper punch is arranged to operate subsequently to that of the lower punch so that the two caps, which are formed simultaneously, are ejected successively to reduce the risk of the caps jamming or wedging as they drop down into the mouth of a cap delivery chute.

3,738,148
DIE AND METHOD OF MAKING THE SAME

Evgeny Mikhailovich Perminov, Angarskaya, 26, Korpus I, kv. 10, Minsk, U.S.S.R.

Filed Aug. 14, 1970, Ser. No. 63,786
Int. Cl. B21j *13/02*
U.S. Cl. 72—362 **2 Claims**



Technological tooling in which a die comprises a female die member provided with similar spherical hollows uniformly distributed along a circumference and removable balls placed into the hollows, with the balls having a radius equal to that of the hollows.

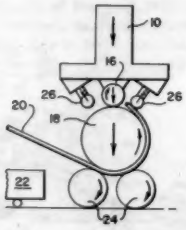
The die is made by embossing spherical hollows by means of the balls placed into prefabricated centering recesses between two coaxial blanks of the female dies which are subjected to axial squeezing in several stages, in which case the blanks are turned relative to each other through an angle between two adjacent recesses.

The die is designed primarily for making ball-type indexing devices.

3,738,149
PIPE FORMING APPARATUS AND METHOD

Bill Archer, Route 8, Box 275, Meridian, Miss.

Filed Oct. 1, 1971, Ser. No. 185,497
Int. Cl. B21d *5/14*
U.S. Cl. 72—171 **4 Claims**



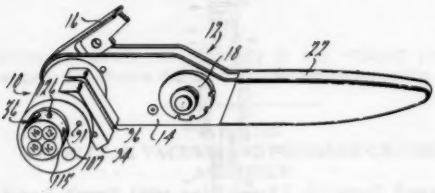
Apparatus and method for making completely rounded pipe cylinders of selectively different diameters and wall thicknesses, with a minimal change-over time loss. The invention includes a combination of press and cylinder roll including a floating roll, press roll, drive rolls and stabilizing rolls, so interrelated and interacting to form a complete circular pipe cylinder from flat stock. The method entails the use of various

diameter removable of floating rolls appropriate for changes in diameter of pipe cylinder, or wall thickness of pipe cylinder to be formed, with no appreciable time loss in the change-over from one end product to another.

3,738,150
TURRET HEAD ASSEMBLY

Marion B. Holmes, Drayton Plains, Mich., and Albert E. Ganzert, Elmwood Park, Ill., assignors to Daniels Manufacturing Corp., Bloomfield Mills, Mich.

Filed May 20, 1971, Ser. No. 145,221
Int. Cl. B21d *9/08*
U.S. Cl. 72—410 **24 Claims**

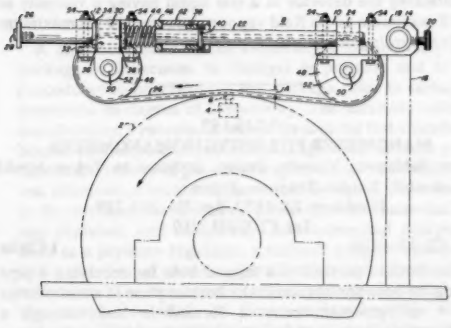


This disclosure pertains to an improved turret head assembly for use with a crimping tool for connecting an electrical contact or the like to a wire conductor. As used herein, the term "contact" is intended to include male and female contacts, connectors, terminals, and like devices adapted to be affixed to the end of a wire conductor. A plurality of contact positioners adapted to accommodate various contact sizes are provided in a selectively rotatable turret head disposed in a bore of a housing member. The turret head is further adapted to be selectively positioned axially within the bore to accommodate contacts of varying length. The positioners locate and hold the contacts so that the portion thereof to be crimped is axially and radially positioned at the desired point in line with the crimping dies to effect crimping.

3,738,151
STRIP LOAD SIMULATOR FOR SHAPE-MEASURING ROLL

Joseph S. Giunta, Monroeville Borough; Thomas E. Nicely, Delmont, and Edward J. Patula, Monroeville Borough, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed May 2, 1972, Ser. No. 249,639
Int. Cl. G01l *25/00*
U.S. Cl. 73—1 B **5 Claims**

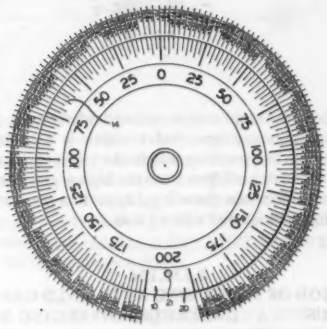


A strip load simulator for calibration of a shape-measuring roll with load sensing devices has an endless belt tensioned between two pulleys and mounted in a frame pivoted so that the belt rests on the roll surface. When the roll is rotated, the weight of the frame, belt and pulleys moves the belt and provides a reproducible force to calibrate the load sensing devices.

3,738,152
POINTERS, DIALS, AND METHOD OF CALIBRATING DIALS FOR MEASURING INSTRUMENTS

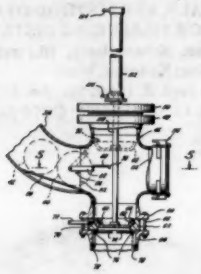
Talmage O. Green, Schaumburg, Ill., assignor to Snap-on Tools Corporation, Kenosha, Wis.

Filed Sept. 8, 1969, Ser. No. 862,615
Int. Cl. G01l *25/00*; G01d *18/00*
U.S. Cl. 73—1 A **10 Claims**



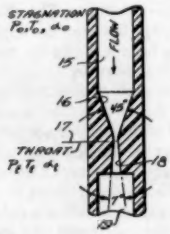
Improved mechanical dial pointers and methods of calibrating dials for precise measuring instrumentalities wherein the mechanical pointer operating linkage moving in a non-linear path, is compensated to reflect the action of their equivalent movements in a linear direction, and take into account the yield in the load applying member. The effective non-linearity of the mechanical linkage between the applied turning load in fastening or loosening fasteners and the meter operating linkage, however small, is caused by an ever increasing linkage angle of movement as such approaches the extremes of displacement around a meter dial. The compensations for the non-linear movement of the linkage are arrived at trigonometrically by resort to the mechanical secant which has a direct relationship with the equivalent arc of movement of any given angle of mechanical linkage movement from zero to their extreme angle of displacement to rotate a calibrated dial pointer within its range for any calibrated dial measuring capacity. The standard method of calibrating measuring meter dials involve uniform graduations of the entire 360° range of a complete circle, but this method is not sufficiently accurate for the state reasons. By utilizing the trigonometric functions of secants, the dial graduations will be farther apart at the full extreme dial scale than at the lower or near zero range of mechanical linkage movements with proportional secant variations between these extremes which also take into account yield in the load applying member. This more closely matches the actual values applied by trigonometrically using the mathematical secant for greater accuracy in graduating the markings around a calibrated dial to more closely interpret the linear displacement in terms of the equivalent non-linear movements of the mechanical linkage, and by measuring the angularity of the mechanical linkage at the maximum rated capacity of the measuring instrument, this reflects the yield in the load applying member.

3,738,153
VALVELESS PROVER
C. R. Simmons, Pasadena, Tex., assignor to Helmerich & Payne, Inc., Houston, Tex.
Continuation-in-part of Ser. No. 81,821, Oct. 19, 1970. This application Aug. 24, 1971, Ser. No. 174,458
Int. Cl. G01f 25/00
U.S. Cl. 73—3 13 Claims



A continuous loop meter prover wherein a hydraulic cylinder operates a poppet valve which is used to force a sphere from the low pressure side to the high pressure side, the poppet valve closing off flow from the high pressure side to the low pressure side when there is no sphere in the interchange, and providing a block and a bleed seal.

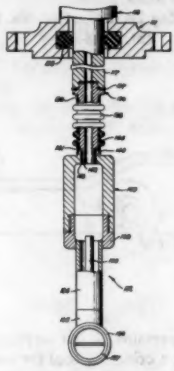
3,738,154
METHOD OF MEASURING ENTRAINED GAS IN A LIQUID USING A CONVERGING-DIVERGING NOZZLE
Robert E. Henry, Western Springs, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed Oct. 20, 1971, Ser. No. 190,876
Int. Cl. G01n 7/00
U.S. Cl. 73—19 5 Claims



A choked converging-diverging nozzle is employed in a method of detecting the presence and measuring the volumetric concentration of entrained gas in a liquid. The liquid-gas mixture is accelerated through the nozzle to critical flow condtions and the pressure at the throat of the nozzle is measured. The temperature and pressure of the mixture of the stagnation region are monitored, the throat pressure of the liquid-gas mixture being a function of only the void fraction at any given stagnation temperature and pressure.

The method is employed in safety instrumentation for a liquid-cooled nuclear reactor. The throat pressure is monitored with an increase in the throat pressure indicating an undesirable increase in the concentration of entrained gas in the liquid coolant of the reactor which operates at approximate steady state conditions.

3,738,155
DENSITOMETER PROBE SUPPORT
Charles Eveleigh Miller, Boulder, Colo., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Mar. 11, 1971, Ser. No. 123,350
Int. Cl. G01n 9/00
U.S. Cl. 73—32 13 Claims



A flexible support for a retractable vibration densitometer probe including a rigid tube telescoped into the rigid housing of the probe in spaced relation thereto and a metal bellows sealed to the tube and probe in spaced relation thereto. The space between the bellows and the tube, and the space between the tube and housing are filled with a single piece of rubber bonded to all of the surfaces surrounding it.

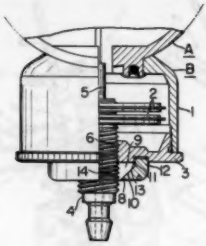
3,738,156
METHOD USING TEST LIQUID AND ULTRASONIC LEAK DETECTOR FOR
Hendrik Bosselaar, 3 Badhuisweg, Amsterdam, Netherlands
Filed Apr. 6, 1971, Ser. No. 131,766
Claims priority, application Netherlands, Apr. 8, 1970, 7005002
Int. Cl. G01m 3/08
U.S. Cl. 73—40.5 A 5 Claims

A method for detecting leaks in pipelines that is sensitive to acoustic signals in the ultrasonic range with the detector being transported through the pipeline by fluid flow. The method comprises transporting the detector through the pipeline while maintaining the detector in a test liquid having a viscosity of 30 cS maximum and a Reid vapor pressure of 10 psi maximum while recording the ultrasonic noise level.

3,738,157
MANOMETER FOR SPHYGMOMANOMETER
Shine Sekizawa, Yamato, Japan, assignor to Tokyo Iryoki Kabushiki Kaisha, Tokyo-to, Japan
Filed Aug. 23, 1972, Ser. No. 283,229
Int. Cl. G01l 7/10
U.S. Cl. 73—420 1 Claim

The bottom portion of a tapped hole for receiving a pipe fitting for hose connection in the bottom plate of a manometer for a sphygmomanometer is formed in and through a frustoconical boss part projecting downward from the lower surface of the bottom plate and split into divisional parts by a plurality of radial slots, and a clamping nut or locknut having an internal frusto-conical surface similarly as the chuck nut of a drill chuck is screwed onto the boss part. When this locknut

is tightened, it compresses the boss part radially through wedge action of the conical surfaces thereby to lock the pipe



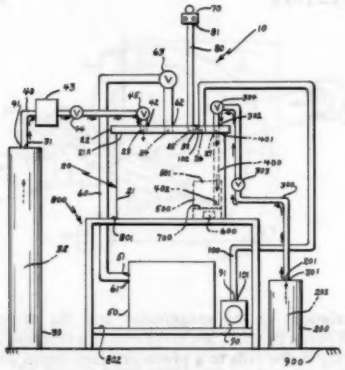
fitting accurately and positively in any adjusted position without disturbance thereof due to the tightening action.

3,738,158

GROSS LEAK VACUUM AND PRESSURE CHAMBER ASSEMBLY

John P. Farrell, Utica, and Edward P. O'Connell, Rome, both of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 6, 1972, Ser. No. 241,549
Int. Cl. G01m *3/20*
U.S. Cl. 73—40.7 **5 Claims**



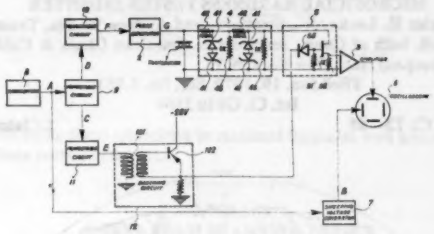
A chamber assembly for subjecting a hermetically sealed package to a vacuum, to changes in pressure and to other procedures to precondition the package prior to testing it to determine its degree of hermeticity. The assembly includes a test chamber, a receptacle which fits into the test chamber and houses the hermetically sealed package which is to be preconditioned, a source of gas under high pressure connected to the test chamber, a source of fluorocarbon liquid also connected to the test chamber, a vacuum pump likewise connected to the test chamber, and cooperative interconnected components, such as a pressure regulator, a vacuum gauge, a safety valve, and a plurality of pressure shutoff valves and of vacuum shutoff valves. The hermetically sealed package is placed within the receptacle which, in turn, is placed within the test chamber. The hermetically sealed package is then subjected to arteaccepted preconditioning procedures, including exposure to a vacuum, changes in pressure, and soaking in fluorocarbon liquid, without being exposed to ambient during the performance of the procedures.

3,738,159

TESTING DEVICE FOR INSPECTING AN OBJECT

Henry Donnadieu, Le Pecq, France, assignor to Institut De Recherches De La Siderurgie Francaise, St. Germain-en-Laye, France

Filed Aug. 25, 1971, Ser. No. 174,814
Claims priority, application France, Sept. 2, 1970, 7031907
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.9 **2 Claims**



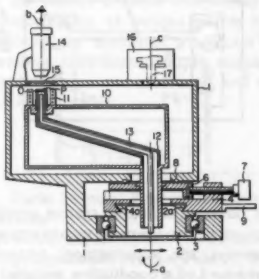
The pulses of electrical energy adapted to excite an electromechanical transducer used to inspect an object are blocked on their way to the amplifier by a commutation circuit comprising a commutation stage and capable of selectively transmitting and blocking the signals, and a control circuit producing a signal blocking pulse at least during the duration of the transducer exciting pulses, which blocking pulse is applied to the commutation stage.

3,738,160

HIGH-TEMPERATURE HARDNESS METER PROVIDED WITH A DEVICE FOR MOVING A SAMPLE OBJECT

Masaru Sobajima, Meguro-ku, Tokyo, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

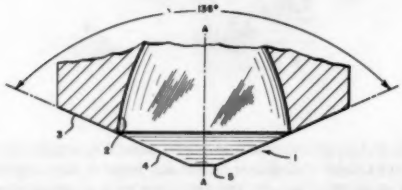
Filed Dec. 16, 1971, Ser. No. 208,649
Claims priority, application Japan, Dec. 24, 1970, 45/116647
Int. Cl. G01n *3/48*
U.S. Cl. 73—81 **4 Claims**



A high-temperature hardness meter includes a microscope and pressure means mounted on top of a hermetically sealed housing, the pressure means including a pressing member. The optical axis of the microscope is vertical and the axis of the pressing member is parallel to the optical axis of the microscope. The lower wall of the housing is formed with an opening extending downwardly and having its axis equidistant from the axes of the microscope and pressing member. A rotatable bed is disposed below the opening for rotation about the axis thereof. Movable means is mounted on the rotatable bed for movement with respect to the bed in two horizontal

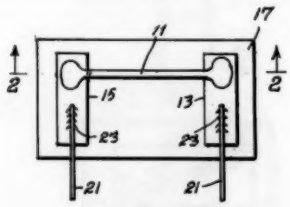
directions orthogonal to each other and perpendicular to the axis of the opening. Gas tight sealing means is interposed between the movable means and the housing portion adjacent to the opening. The movable means is also rotatable about the axis of the opening. An anvil for holding the sample object is fixed to the movable means and extends to a height just beneath the microscope. The opening, the rotatable bed, the movable means, the sealing means and the anvil together constitute a device for moving the sample object.

3,738,161
MICROFICIAL HARDNESS TESTER INDENTER
Charles H. Lucke, Jr., Stratford, and Andrew R. Fee, Trumbull, both of Conn., assignors to American Chain & Cable Company, Inc., New York, N.Y.
Filed Jan. 19, 1970, Ser. No. 4,051
Int. Cl. G01n *3/44*
U.S. Cl. 73—85 **2 Claims**



An improved diamond indenter for measuring the hardness of thin material, the indenter having flattened sides and a flattened end for reducing the depth of penetration under the applied loads.

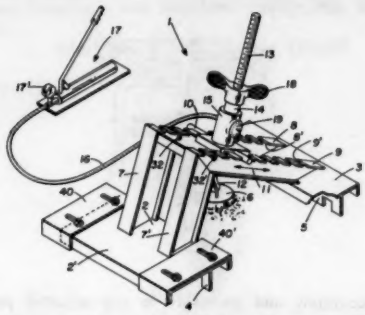
3,738,162
FATIGUE DAMAGE INDICATOR
James W. Daily, Silver Spring, Md., and Gustavo A. Panizza, Chicago, Ill., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Sept. 10, 1971, Ser. No. 179,370
Int. Cl. G011 *5/00*
U.S. Cl. 73—88.5 R **1 Claim**



In a fatigue damage indicator system comprising a work piece structure, carrier and sensing means operably connected to indicator means; the improvement wherein the sensing means are composed of a conductive material dispersed in a matrix of an insulating material.

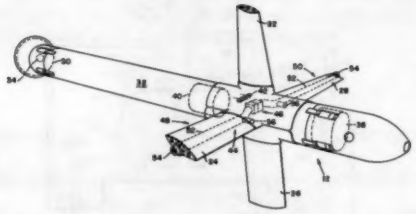
3,738,163
ANCHOR TESTER
Robert H. McEntire, Richardson, Tex., assignor to Atlantic Richfield Company, New York, N.Y.
Filed Mar. 24, 1972, Ser. No. 237,729
Int. Cl. G01n *3/10*
U.S. Cl. 73—95 **8 Claims**

A device for testing anchors (dead men) embedded in the earth so that a force can be applied to the anchor at a known and desired angle, the device employing an inclined support surface which carries a piston and cylinder means. The piston



and cylinder means can be moved and stopped at a plurality of points along the length of the support surface.

3,738,164
MEASUREMENTS PERTAINING TO OCEAN CURRENTS BY GEOMAGNETIC INDUCTION
Thomas B. Sanford, West Falmouth, and Robert G. Drever, Hatchville, both of Mass., assignors to Woods Hole Oceanographic Institution, Woods Hole, Mass.
Filed May 21, 1971, Ser. No. 145,816
Int. Cl. G01n *9/08*
U.S. Cl. 73—170 A **37 Claims**

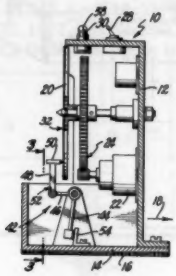


The variations in the magnitudes and the directions of horizontal ocean currents are measured as a function of depth. A measuring probe falls to a predetermined depth and is carried by the current. The probe has a circuit within which a varying elecric potential is induced by the earth's magnetic field. This potential is a function of the velocity of the probe and the velocity of the sea water. Data derived from this potential and the related sea water temperature and pressure are used to derive detailed vertical characteristic profiles of ocean currents.

3,738,165
AIRCRAFT TAKEOFF ABORT INDICATOR
Raymond J. Hansen, P. O. Box 727, Sanger, Calif.
Filed Feb. 7, 1972, Ser. No. 224,211
Int. Cl. G01c *21/10*
U.S. Cl. 73—178 T **8 Claims**

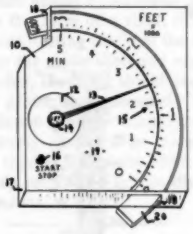
An apparatus for indicating to the pilot of an aircraft whether to abort a takeoff because of subnormal acceleration of the aircraft during the takeoff run. The apparatus includes: a chart of the normal takeoff acceleration versus takeoff time for the aircraft for a particular set of conditions; a warning indicator; and means adapted to scan the chart, and responsive to subnormal takeoff acceleration, for actuating the warning indicator. The chart is provided with a conductive area

representing the subnormal takeoff acceleration versus takeoff time relationship for the aircraft and particular set of conditions, and the actuating means for the warning indicator



includes a contact engageable with such conductive area. Each aircraft is provided with a set of charts covering different airports, different aircraft weights, different wind and barometric pressure conditions, and the like.

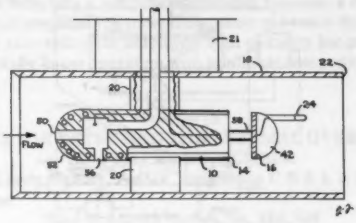
3,738,166
FINAL APPROACH TIMER
Martin Allen Fisher, 1244 S.W. 13 Court, Miami, Fla.
Filed Oct. 27, 1971, Ser. No. 192,946
Int. Cl. G01c *21/00*
U.S. Cl. 73—178 T **5 Claims**



A combination clock and altitude indicator arrangement incorporating a limited time stop clock settable any time to five minutes, the minute hand extending beyond the minute markers to a card insertable into a slot beside the minute markers whereby the minute hand points to the minutes remaining as well as the feet of altitude scribed on the inserted card.

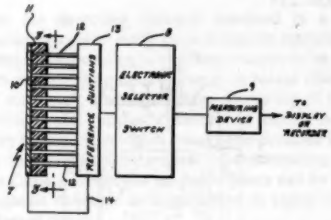
3,738,167
AIRSPEED AND ALTITUDE MEASURING DEVICE
Douglas F. White, Bedminster, N.J.; Marvin D. Scadron, Glenview, and Joseph C. Faul, Melrose Park, both of Ill., assignors to American Standard Inc., New York, N.Y.
Division of Ser. No. 737,717, June 17, 1968. This application June 22, 1970, Ser. No. 59,820
Int. Cl. G01c *21/00*
U.S. Cl. 73—181 **1 Claim**

The airspeed of an airplane is determined by means of a device which includes an upstream cylindrical member and a downstream disc-like member spaced from said cylindrical member by a predetermined distance. Oscillations are produced in the air which passes around the cylindrical and disc structures and the frequency of the oscillations are measured. The frequency of the oscillations is directly related to the velocity of the fluid thus providing a direct determination of airspeed. The altitude of the airplane is computed with great accuracy, by measuring directly, the total air temperature and air stagnation pressure in addition to the airspeed,



and using these quantities in standard formulas well known to those versed in the art.

3,738,168
LASER BEAM SCANNING DEVICE
Dennis N. Mansell, Palos Verdes Peninsula, Calif., assignor to The United States of America as represented by the Secretary of the Air Force
Filed Nov. 16, 1971, Ser. No. 199,184
Int. Cl. G01k *17/00*
U.S. Cl. 73—190 R **1 Claim**

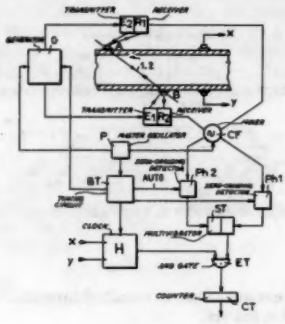


Scanning of a high power laser beam while it is being used is accomplished by deflecting the laser beam to its target with a polished metal mirror. Multiple thermocouple wires attached to the rear of the mirror provide temperature (and hence beam power) information at various points on the mirror. Scanning is achieved by means of a selector switch which sequentially samples the thermocouple outputs. The thermocouple output voltages are measured and recorded as a function of laser beam power.

3,738,169
ULTRASONIC FLOWMETERS
Albert Courty, Paris 16 eme, France, assignor to Thomson-CSF, Paris, France
Filed Feb. 11, 1971, Ser. No. 114,644
Claims priority, application France, Feb. 17, 1970, 7005589
Int. Cl. G01f *1/00*; G01p *5/00*
U.S. Cl. 73—194 A **6 Claims**

An ultrasonic flowmeter in which the flow velocity of a fluid through a pipe is measured by comparison of the propagation times of an acoustic wave over oblique trajectories, in both the upstream and downstream directions. A feedback loop comprising an additional transducer pair located on opposite sides of the pipe and transversally thereto and an amplifier delivers a pulsed signal whose repetition frequency is proportional to the velocity of sound in the fluid. An error voltage whose variations are proportional to the frequency of the pulsed signal is derived by means of a discriminator and applied to the control input of a voltage controlled oscillator through a

squaring circuit. Pulses derived from the oscillator are counted in a counter during a time interval corresponding to the difference between the upstream and downstream propagation times.

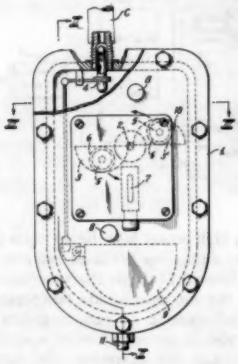


3,738,170

FLOW METER FOR MEASURING SMALL QUANTITIES OF LIQUID FUEL

Sozaburo Maeshiba, 33-32 4-chome Hakataekimae, Fukuoka, Japan

Filed July 2, 1971, Ser. No. 159,300
Int. Cl. G01p *1/00*
U.S. Cl. 73—217 **1 Claim**



A flow meter for measuring small quantities particularly of liquid fuels. A chamber is provided with cups mounted to rotate in a paddle wheel manner by the flow of liquid. Magnets of opposite polarity are carried by each cup. An electromagnet magnet alternately attracts and repels the cups to bring then into filling and them emptying position. A reed switch is actuated by the magnets to provide a measure of flow and reverse the polarity of the electromagnet.

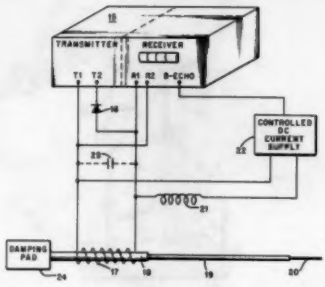
3,738,171

ATTENUATION COMPENSATION FOR ULTRASONIC THERMOMETERS

Robert L. Shepard, and Albert H. Malone, both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 26, 1972, Ser. No. 247,532
Int. Cl. G01k *11/24*
U.S. Cl. 73—339 A **3 Claims**

A current source and control circuit are used to supply a DC bias current to the driver coil of an ultrasonic thermometer. The magnitude of the ultrasonic echo signal is thereby increased by more than a factor of two and the upper temperature sensing limit, which is due in large part to sound attenuation in the sensor, is raised.



3,738,172

TEMPERATURE SENSING PROBE AND DISPOSABLE PROBE COVER

Stephens N. Sato, San Diego, Calif., assignor to Ivac Corporation, San Diego, Calif.

Division of Ser. No. 28,367, April 14, 1970. This application Nov. 22, 1971, Ser. No. 200,749
Int. Cl. G01k *1/08, 1/00, 1/16*
U.S. Cl. 73—343 R **16 Claims**

Thermometer apparatus including an elongated, temperature sensing probe having a combined finger grip and mounting collar at one end with a concentric shaft resiliently urged forwardly of the leading end of the collar, the end of the shaft remote from the collar having a thermistor heat sensing tip. A disposable cover in the form of a rigid, thermally insulating tube having a heat conducting shield at the tip of the cover is adapted to slide over the probe shaft and engage cover retaining means on the collar, the cover shield engaging the sensing tip and driving the probe shaft rearwardly toward the collar during cover installation prior to temperature measurement. The cover is selectively ejected after temperature measurement by manually driving the probe shaft forwardly of the mounting collar with sufficient force to disengage the cover from the retaining means.

3,738,173

TEMPERATURE SENSING PROBE AND DISPOSABLE PROBE COVER

Stephens N. Sato, San Diego, Calif., assignor to Ivac Corporation, San Diego, Calif.

Division of Ser. No. 28,367, April 14, 1970. This application Nov. 22, 1971, Ser. No. 200,748
Int. Cl. G01k *1/08, 1/00, 1/16*
U.S. Cl. 73—343 R 13 Claims

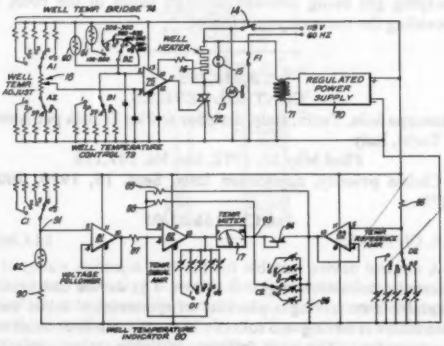
Thermometer apparatus including an elongated, temperature sensing probe having a combined finger grip and mounting collar at one end with a concentric shaft resiliently urged forwardly of the leading end of the collar, the end of the shaft remote from the collar having a thermistor heat sensing tip. A disposable cover in the form of a rigid, thermally insulating tube having a heat conducting shield at the tip of the cover is adapted to slide over the probe shaft and engage cover retaining means on the collar, the cover shield engaging the sensing tip and driving the probe shaft rearwardly toward the collar during cover installation prior to temperature measurement. The cover is selectively ejected after temperature measurement by manually driving the probe shaft forwardly of the mounting collar with sufficient force to disengage the cover from the retaining means.

3,738,174

TEMPERATURE CALIBRATION SYSTEM

Bradley C. Waldron, Canoga Park, Calif., assignor to King Nutronics Corporation, Van Nuys, Calif.

Filed Mar. 1, 1972, Ser. No. 230,768
Int. Cl. G01k *7/24, 15/00*
U.S. Cl. 73—362 AR 7 Claims



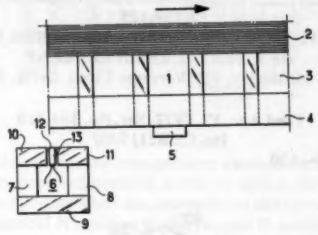
A temperature calibration system including a well for receiving a temperature sensor such as a thermometer or thermocouple, and a heater for heating the well to a desired and adjustable temperature. A single well instrument providing a temperature range of 100° to 600° F. in five steps. A temperature measuring circuit for indicating the temperature of the well and including a temperature sensing element, a temperature signal amplifier, an indicating meter and series diode, and a meter zero reference amplifier, with circuitry for providing substantially linear operation with nonlinear components.

3,738,175

DEVICE FOR DETECTING THE THERMAL OVERLOADS OF A ROTATING MEMBER

Andre Linsig, Belfort, France, assignor to U N E L E C, Paris, France

Filed Oct. 4, 1971, Ser. No. 186,300
Int. Cl. G01k *5/18*
U.S. Cl. 73—362 CP 5 Claims



A device for detecting thermal overload in a rotating member includes a piece made from magnetic material having a Curie point corresponding to the temperature to be detected disposed on said rotating member so as to rotate along a path adjacent a stationary magnetic bridge consisting of two arms through which pass opposite fluxes of equal magnitude separated by an air gap in which a magnetic detector is located so that an increase in temperature of the rotating member beyond the Curie point of the magnetic piece can be detected by the magnetic detector as a reduction in signal level or a complete loss of signal.

3,738,176

TRANSPARENT LIQUID LEVEL INDICATOR

William Kerfoot, P.O. Box A, Berryville, Va.

Continuation-in-part of Ser. No. 15,244, Feb. 27, 1970, Pat. No. 3,594,906. This application July 26, 1971, Ser. No. 166,043
Int. Cl. G01n *1/10*
U.S. Cl. 73—425.4 R 2 Claims

The present invention relates to a transparent liquid level indicator in which a transparent casing is disposed within a

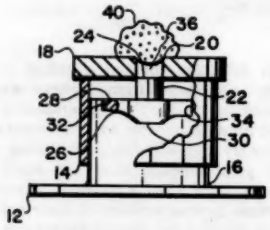
tank or reservoir and is provided with a movable plunger. The transparent casing is of a tubular configuration and is made separate from a housing to which it is secured so that the tubular member can be made of various dimensions and mass-produced in an economical manner. Biasing means normally maintain a movable plunger disposed in the housing in an uppermost position, and when the handle is depressed, the plunger is provided with a piston on its lower end which moves downwardly in the tubular member below a liquid inlet port. The liquid in the tank then enters the casing, and the handle is released so the biasing means cause the handle to move back to its uppermost position to trap liquid in the transparent tubulr member. The liquid trapped in the tubular member indicates the level of the liquid in the reservoir when the tubular member and housing is removed from the reservoir.

3,738,177

APPARATUS FOR DISPENSING A MEASURED VOLUME OF A DENTAL RESIN REAGENT

Robert C. McShirley, 917 Verdugo Circle Drive, Glendale, Calif.

Filed Apr. 17, 1972, Ser. No. 244,710
Int. Cl. B21j *9/00*
U.S. Cl. 73—429 **4 Claims**



Disclosed is a device for metering measured amounts of dental restorative resin. The device includes a cylinder and a hub arranged so that rotation of the cylinder on the hub moves the members axially a known amount to create an opening in the end surface of the cylinder. After the opening is filled with the resin, the members are rotated back, which causes the hub to push the material from the opening up to the level of the end surface of the cylinder.

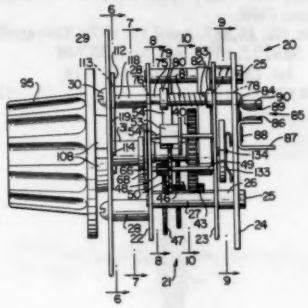
3,738,178

CONTROL DEVICE AND PARTS THEREFOR OR THE LIKE

Edgar E. Marquis, Newtown, and Emil Niemand, Waterbury, both of Conn., assignors to Robertshaw Control Company, Richmond, Va.

Division of Ser. No. 801,559, Feb. 24, 1969, Pat. No. 3,612,789. This application July 20, 1971, Ser. No. 164,469
Int. Cl. G05g *21/00*
U.S. Cl. 74—3.5 **6 Claims**

A control device for actuating an actuator for a predetermined period of time by the turning of a control knob to a selected time period and, thereafter, initiating the running of the time period by depressing a push button member, or for providing a continuous actuation of the actuator by setting the control knob in a continuous on manual position thereof, or for providing momentary manual actuation of the actuator by manually depressing the push button member when the control knob is set in its off position, the control device having a latch member which in one position thereof latches the timer motor from operating and in another position thereof unlatches the timer motor while latching a plunger operator for the actuator in its actuating position in both the time operated



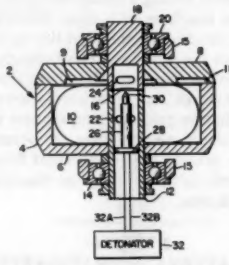
condition of the control device and the continuous on condition thereof.

3,738,179

STORED ENERGY GYRO

John M. Koltz, Saddle River, and Frank J. Scerbo, Emerson, both of N.J., assignors to The Bendix Corporation, Teterboro, N.J.

Filed Sept. 24, 1971, Ser. No. 183,314
Int. Cl. G01c *19/12*
U.S. Cl. 74—5.7 **3 Claims**



A stored energy gyro wherein pressurized air is contained in a chamber surrounded by the gyro rotor. Rotor speed is obtained by rupturing a pressure seal in the chamber, with the escaping gas being directed through vanes in the rotor for providing the necessary spin force.

3,738,180

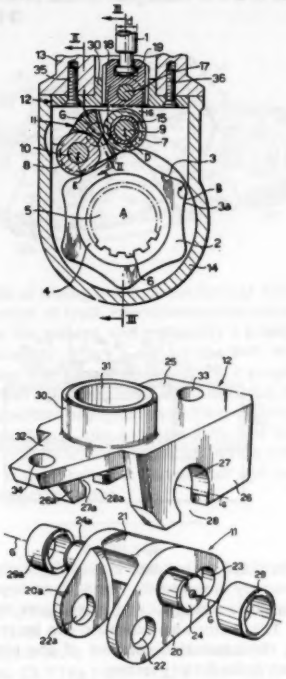
CONTROL DEVICES

Giuseppe Sola, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy

Filed May 26, 1971, Ser. No. 147,118
Claims priority, application Italy, Sept. 15, 1970, 70096 A/70
Int. Cl. F16h *25/05*
U.S. Cl. 74—53 **14 Claims**

A control device suitable for the fuel injection pump of an internal combustion engine is shown. The device comprises a rotatable cam having a plurality of symmetrical lobes and a cam follower having two rollers which are both in contact with the cam face. The cam follower is linked to an operating member of an associated pump. The rollers of the cam follower are relatively large to withstand the forces produced at high speed and the pivot for the cam follower is arranged so

that it does not obstruct the space between the two rollers. The cam profile is so shaped that the two rollers are both al-



ways in contact with the surface of the cam so that there is no play in their movement.

3,738,181

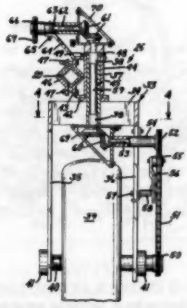
ROTARY DRIVE MECHANISM

Ebenhard S. Gandrud, P. O. Box 528, Owatonna, Minn.

Filed Mar. 10, 1971, Ser. No. 122,781

Int. Cl. F16h *37/00*; A01c *15/00*

U.S. Cl. 74—13 **10 Claims**



A caster including a caster frame journaled in a mobile structure on a generally vertical axis, and a ground engaging wheel journaled in the caster frame. Transmission mechanism includes a rotary shaft disposed on the axis of turning movement of the caster frame, and driving connections between the caster wheel and the rotary shaft to rotate the shaft responsive to rotary travel of the caster wheel over the ground.

3,738,182

CONTROL SYSTEM FOR AN AUTOMATIC TRANSMISSION

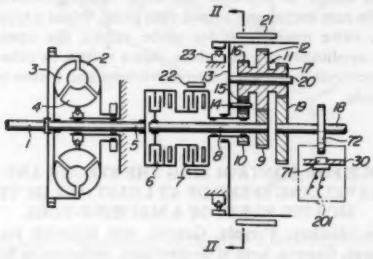
Seitoku Kubo; Mashanao Hashimoto; Teruo Akashi, and Chihiro Hayashi, all of Toyota, Japan, assignors to Toyota Jidasha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed July 19, 1971, Ser. No. 163,838

Claims priority, application Japan, Nov. 21, 1970, 45/103094

Int. Cl. B60k *21/00*; F16h *3/74*

U.S. Cl. 74—866 **5 Claims**



In a vehicle automatic transmission wherein shift points are set through electrical controls, a control system for relieving a shock which occurs when the transmission shift lever is shifted from the neutral N position to the reverse R position or from the parking P position to the R position.

3,738,183

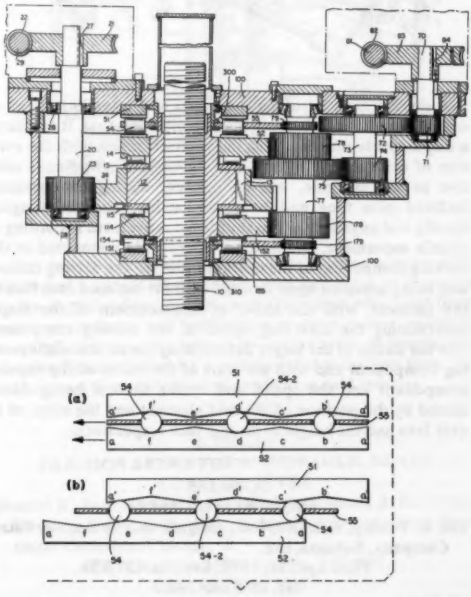
COMBINATION DRIVE FOR VALVE OPERATOR

Russell C. Ball, Jr., Malvern; Walter J. Denkowski, King of Prussia, and Kenneth Wadsworth, Royersford, all of Pa., assignors to Philadelphia Gear Corporation, King of Prussia, Pa.

Filed Feb. 1, 1971, Ser. No. 111,451

Int. Cl. F16h *27/02*

U.S. Cl. 74—89.15 **7 Claims**



A valve operator for closing a globe valve against heavy back pressure has two different types of drives. The two drives

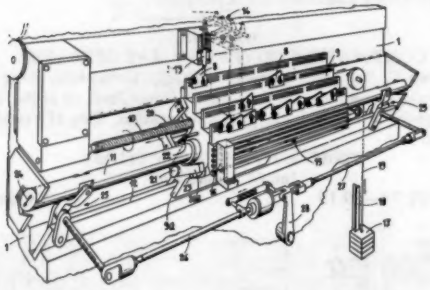
are used in succession. A first type of drive is used for moving the valve stem lengthwise to move the globe valve between open position and an almost-closed position. A second type of drive is used to move the valve between the almost-closed and fully closed positions. The first type of drive includes a rotatable nut threaded on the valve stem, and drive means for rotating the nut. The second type of drive involves a roll-ramp assembly which, when driven rotationally, exerts an axial thrust against the nut and moves the nut without rotation thereof in the axial direction of the valve stem, moving the stem with it. The roll-ramp assembly includes a cam sector driven angularly through a part of a revolution to force a set of rollers up inclined ramps to increase the axial spacing between the rotatable cam sector and a fixed cam plate. While a typical use for the valve operator is for globe valves, the operator is equally applicable to gate valves, sluice valves, or other types of applications requiring linear movement and forces of great magnitude.

3,738,184

DEVICE FOR CONTROLLING THE STROKE AND THE TRAVELLING SPEED OF AT LEAST ONE OF THE MOVING PARTS OF A MACHINE-TOOL

Maurice Matthey, Versoix, Geneva, and Heinrich Imgrund, Carouge, Geneva, both of Switzerland, assignors to Manutar S.A., Fribourg, Switzerland

Filed Nov. 26, 1971, Ser. No. 202,151
Int. Cl. F16h *21/44*
U.S. Cl. 74—110 **6 Claims**



A device for controlling the travel and travelling speed of one of the moving components of a machine-tool. It envisions a displaceable shuttle driven in synchronization with the rotation of the machine spindle and movable longitudinally relative to the machine, and an element having an operating inclined cam face and being adjustably mounted longitudinally and angularly of the shuttle for movement according to shuttle movement, and a finger operatively connected to the moving component of the machine-tool for the driving thereof and being actuated upon contact with the inclined cam face of the element, with the speed of displacement of the finger determining the travelling speed of the moving component and the stroke of the finger determining the stroke of the moving component and with the start of the travel of the moving component and the speed and stroke thereof being determined by the position of the said element and the slope of its cam face and the height of its cam face respectively.

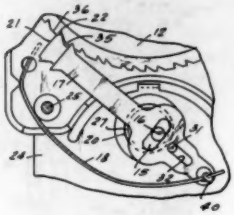
3,738,185

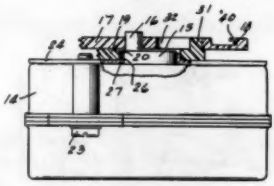
SEQUENTIAL TIMER

Lee A. Wooley, Kokomo, Ind., assignor to The Scott & Fetzer Company, Kokomo, Ind.

Filed Apr. 26, 1971, Ser. No. 137,138
Int. Cl. F16h *29/00*
U.S. Cl. 74—116 **14 Claims**

A timer includes a disc-type of cam having circular tracks thereon for coaction with switches, all carried by a housing. A motor is mounted on the housing and has an eccentric that acts through a drive pawl on a series of peripheral teeth on the cam. A stop pawl is included which is pivotally mounted for movement about the rotational axis of the eccentric. The eccentric can rotate in either direction to produce incremental





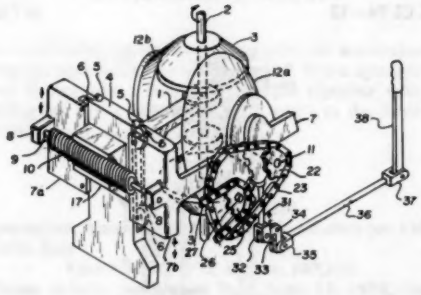
movements of the timing cam in one direction, and the pawls can be reversely mounted for use with an appropriate timing cam to produce timing cam movements in the opposite direction. The motor and eccentric can be removed without disturbing the assembled relation of the remainder of the device, such as for factory testing.

3,738,186

VEHICLE DRIVE ASSEMBLY

Samuel H. Deese, Bel Vernon, Pa., assignor to American Consolidated Industries, Inc., Brownsville, Pa.

Filed May 6, 1971, Ser. No. 140,875
Int. Cl. F16h *15/16*
U.S. Cl. 74—191 **4 Claims**



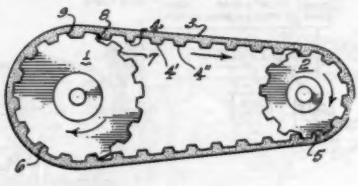
This invention relates to a vehicle power transmission and differential unit having two pairs of cone drives in right angular relationship. One pair is stationarily mounted on a vertical axis and the other pair is resiliently mounted and movable along vertical tracks so as to selectively move each of the horizontally disposed cones in driving contact with either of the stationarily mounted cones so as to cause the vehicle to selectively move forwardly, rearwardly, to the right, to the left or to neutral.

3,738,187

HUNTING-TOOTH TIMING BOLT

Charles A. Hisserich, 447 Cabrillo St., Costa Mesa, Calif.

Filed Oct. 14, 1971, Ser. No. 189,189
Int. Cl. F16g 1/28
U.S. Cl. 74—231 C 5 Claims



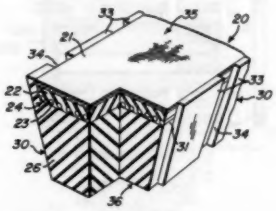
A toothed belt or timing belt in a mechanical drive system, which has a number of teeth incommensurable with the numbers of teeth on the pulleys, and preferably a prime number. With this relationship, every tooth on the belt will, during operation, engage every tooth on a pulley in a progressive repeating series, thus equalizing wear and minimizing damage to the belt from repetitive engagement with any deformed or defective pulley tooth, e.g., one having a burr. The invention is useful in drive systems which necessarily have a simple ratio, such as the 2:1 ratio between the crankshaft and camshaft of an internal combustion engine.

3,738,188

POWER TRANSMISSION BELT AND METHOD OF MAKING SAME

Robert L. Ray, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Mar. 1, 1971, Ser. No. 119,643
Int. Cl. F16g 5/00, 1/22; B29h 7/22
U.S. Cl. 74—234 18 Claims



An endless power transmission belt and method of making same is provided wherein the belt has a load-carrying section and a pair of opposed sides arranged adjacent opposite ends of the load-carrying section with each of the sides having raised surface portions which are adapted to engage the walls of an associated sheave to control the traction properties of the belt operating in such sheave. The belt may also be provided with raised surface portions or a tooth-like configuration on the top and/or bottom thereof to provide increased belt flexibility.

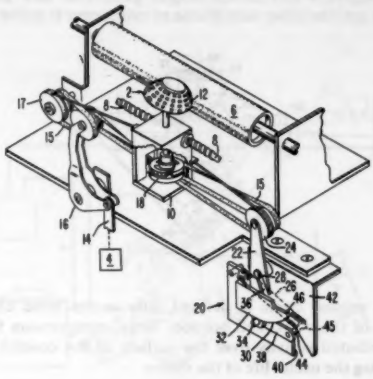
3,738,189

TENSION RELEASING DEVICE

Kun-Chao C. Chen, Plymouth, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed June 15, 1971, Ser. No. 153,173
Int. Cl. F16h 7/12
U.S. Cl. 74—242.15 R 8 Claims

A device for releasing tension in a flexible tape or the like having a movable tape-engaging member that is guided in its displacement by a first camming surface. Excessive tension exerted in the tape causes the tape-engaging member to displace in opposition to a biasing means along said first camming surface, the camming surface guiding the tape-engaging member



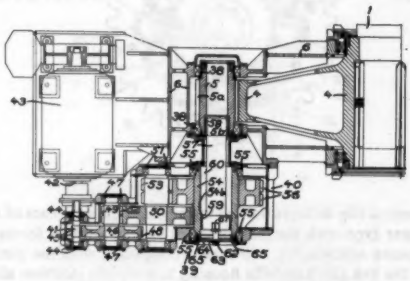
pivotally and translationally to describe a desired path of tape-slackening displacement.

3,738,190

DEVICES FOR ROTATING A BODY

Georges Henriot, Houilles, France, assignor to Engrenages et Reducteurs (Engrenages Citroen et Etablissements Robert Messian reunis), Villacoublay, France

Filed Mar. 9, 1971, Ser. No. 122,323
Claims priority, application France, Mar. 11, 1970, 7008740
Int. Cl. F16h 57/00
U.S. Cl. 74—411 4 Claims



This invention relates to a device for rotating a body, constituted of a geared wheel unitary with said body, at least one pinion capable of cooperating with the geared wheel and by at least one reducer unit comprising a drive motor, whilst a coupling connects the pinion to the reducer, wherein this coupling is constituted by a member that is distinct from the reducer and dismountable separately from said reducer.

3,738,191

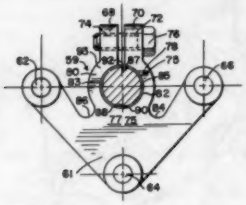
FRICTION BRAKE FOR A HYDRAULIC DRAFT CONTROL LEVER

Donald K. Fadden, Clarendon Hills, and Harold J. De Groot, Downers Grove, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Sept. 13, 1971, Ser. No. 179,886
Int. Cl. G05g 5/06
U.S. Cl. 74—531 4 Claims

A friction brake having a base member fashioned to provide a weakened portion which comprises, an annular split ring

having a closing means and a cold flowing plastic sleeve. In a relaxed position, the inner diameter of the annular split ring defines a circle, further when torqued tight around a control



lever, a second circle is defined, due to the bend characteristics of the weakened portion. Thus, compression forces are distributed equally over the surface of the control shaft prolonging the useful life of the sleeve.

3,738,192

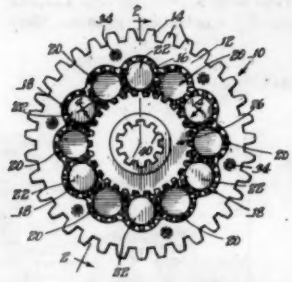
LIMITED SLIP DIFFERENTIAL MECHANISMS

Rudolph J. Belansky, Chicago, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed June 29, 1971, Ser. No. 157,820

Int. Cl. F16h *1/44, 1/42*

U.S. Cl. 74—711 **9 Claims**



A limited slip differential having sun and pinion gears of the spur gear type with the pinion gears having various forms of hub means wherein the hub means cooperate with the pinion gears, the sun gears and the housing to properly position all of the elements to provide effective differential action and to produce sufficient friction or reactive forces between the elements to provide limited slip action.

3,738,193

WORKING OIL PRESSURE CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION WITH TORQUE CONVERTERS

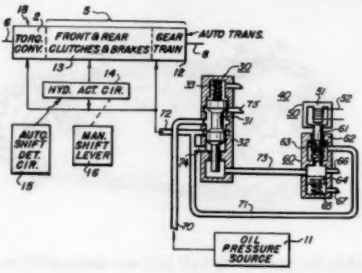
Masaharu Sumiyoshi, Toyota; Shigeru Sakakibara, Chita-gun, Aichi-ken, and Osamu Ito, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Continuation-in-part of Ser. No. 876,784, Nov. 14, 1969, abandoned. This application Feb. 4, 1972, Ser. No. 223,476

Int. Cl. F16h *47/00, 3/74;* **B60k** *21/00*

U.S. Cl. 74—731 **11 Claims**

A working oil pressure control system to reduce shift shock in automatic transmissions with torque converters wherein, by virtue of the fact that the torque transmitted corresponds to the slip ratio between the torque converter pump and the torque converter turbine, the working or operating oil pressure applied to the friction engaging or clutch and brake means of a gear transmission is controlled so as to decrease



when the slip ratio in the torque converter increases and vice versa.

3,738,194

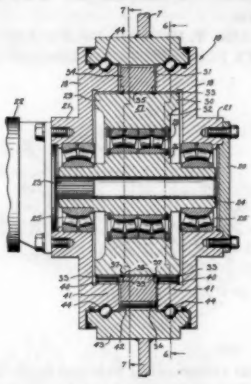
IMPROVED SPEED REDUCING TRANSMISSION

Ervin W. Lorence, Cedarburg, Wis., assignor to Lorence Manufacturing Corp., Milwaukee, Wis.

Filed Feb. 11, 1971, Ser. No. 114,558

Int. Cl. F16h *1/28;* **B62d** *55/12*

U.S. Cl. 74—805 **5 Claims**



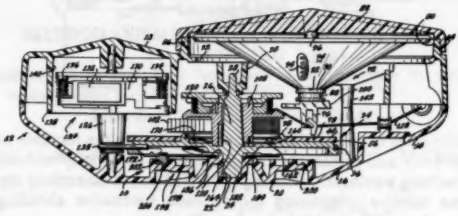
An improved speed reducing transmission having particular use in driving the endless treads of heavy construction equipment. One end of the tread frame is provided with a recess or slot and the transmission is removably secured within the slot. The transmission includes a pair of fixed end plates secured to the tread frame and a motor is mounted on one of the end plates. The motor drive shaft drives an eccentric which is mounted for rotation within an opening in a floating gear unit located between the end plates. The gear unit is composed of a central large diameter gear and a pair of small diameter gears located on each side of the large diameter gear. Each of the small diameter gears is adapted to engage a fixed gear ring, while the larger central gear is adapted to engage a rotatable output member that is connected to the drive sprocket for the tread. Rotation of the eccentric acts to drive the smaller gears in the opposite direction and at a slower rate of speed to provide a first stage speed reduction and results in the output member being driven by the larger gear at a further reduced speed to provide a second stage speed reduction.

3,738,195

INDEXING APPARATUS

Howard R. Stern, Anaheim; James E. Marshall, Santa Ana, and Thomas E. Sloane, Jr., Rolling Hills Estates, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Oct. 5, 1971, Ser. No. 186,623
Int. Cl. B23q 17/18; F16d 41/32
U.S. Cl. 74—819 8 Claims



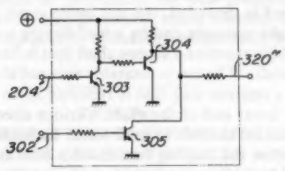
An indexing mechanism for playing a plurality of messages on a phonograph record sequentially by stopping the record at predetermined reversely rotated positions following playing of each message. A first stop on the record engages a third stop on a carrier frictionally coupled to the record for movement thereby during reverse rotation until a second stop interrupts movement of the carrier with the record coincident to movement of the third stop into the path of travel of the first stop. The carrier again moves with the record during forward movement thereof to move the third stop out of the path of travel of the first stop when the next message is played.

3,738,196

CONTROL SYSTEM FOR AN AUTOMATIC TRANSMISSION

Seitoku Kubo; Mashanao Hashimoto, and Chihiro Hayashi, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed July 30, 1971, Ser. No. 167,593
Claims priority, application Japan, Nov. 21, 1970, 45/103095
Int. Cl. B60k 21/00; F16h 3/74
U.S. Cl. 74—866 1 Claim



In a vehicle automatic transmission of the type which performs the setting of shift points through electrical controls, a control system designed such that the transmission starts in the third speed under low engine load conditions, while the transmission starts in the first speed under high engine load conditions.

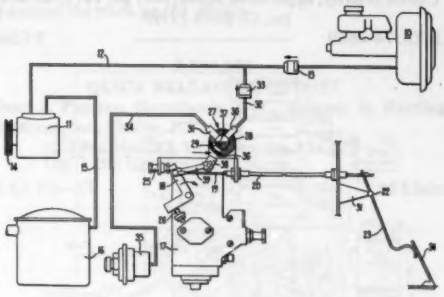
3,738,197

TRANSMISSION MODULATOR VALVE CONTROL

Karl Brumm, Russelsheim-Konigstadten; Jakob Moos, Oestrich; Rainer-Jorg Weber, Russelsheim; Helmut Drott, Wallerstadten, and Bernd Stelzig, Russelsheim, all of Germany, assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 24, 1972, Ser. No. 220,291
Claims priority, application Germany, Mar. 17, 1971, P 21 12 804.1
Int. Cl. B60k 21/02; F16k 11/02, 31/50
U.S. Cl. 74—865 7 Claims

A vacuum-control modulator arrangement for an automatic transmission of a motor vehicle, primarily for use in conjunction with a diesel or other fuel-injection engine, includes a vacuum generator arranged to be driven at a function of engine speed, to produce thereby a degree of vacuum which increases with increasing engine speed, and a proportioning valve which is responsive to accelerator pedal setting, or other



control indicative of engine speed, to proportion the vacuum output from the vacuum generator so as thereby to produce a degree of vacuum which decreases with increasing engine speed.

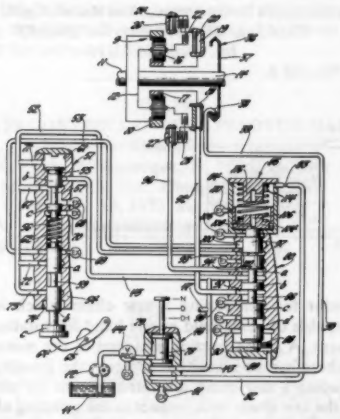
The vacuum generator may simultaneously serve as the power source for a vacuum brake booster of the vehicle.

3,738,198

SHIFT INHIBITORS FOR POWER TRANSMISSION

Nathaniel B. Kell, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 19, 1971, Ser. No. 173,087
Int. Cl. B60k 21/00; F16h 3/74
U.S. Cl. 74—868 5 Claims

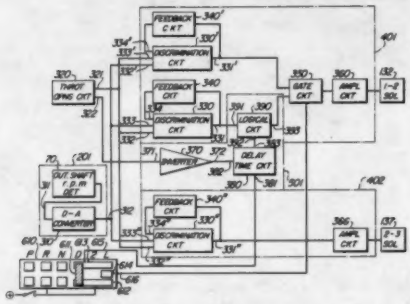


A change-speed planetary transmission for a vehicle with controls including a shift valve having a shift inhibiting control unit operatively connected thereto. The control unit provides for the selective establishment of a predetermined pressure in a control chamber by employing calibrated feed and exhaust orifices which provides a force to move the shift valve element to a downshift position when the opposing force of governor pressure is sufficiently reduced. When the valve downshifts there is an increase in pressure in the control chamber by the closing of the exhaust orifice to inhibit an upshift regardless of subsequent increased governor pressure.

3,738,199
SHIFT CONTROL SYSTEM FOR AUTOMATIC TRANSMISSIONS

Seitoku Kubo; Takakazu Mori; Teruo Akashi, and Chihiro Hayashi, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed May 26, 1971, Ser. No. 147,054
Claims priority, application Japan, May 29, 1970, 45/46519
Int. Cl. B60k *21/00*
U.S. Cl. 74—869 9 Claims

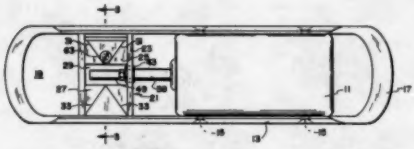


In an automatic transmission including a speed change gear and friction engagement means with hydraulic servo units for accomplishing gear shifting engagements of the speed change gear, a shift control system for automatic transmission comprising shift valves for changing the oil passages to supply or exhaust oil pressures to the hydraulic servo units, shift point computing circuits for generating shift signals to control the oil passage changing operations of the shift valves, and means for controlling the shift signals produced by the shift point computing circuit in terms of time.

3,738,200
GRINDING APPARATUS AND METHOD

Elof Granberg, 201 Nevin Avenue, San Rafael, Calif.

Filed June 25, 1971, Ser. No. 156,859
Int. Cl. B23d *63/16*
U.S. Cl. 76—25 A 4 Claims



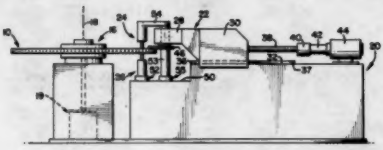
A grinder for sharpening a saw chain which includes a motor capable of being held in one hand for rotating a grinding element. A frame portion attached to the motor and extending therefrom to a position adjacent the grinding element and including a saw chain alignment means for aligning the angle of the saw chain with respect to the grinding element, to sharpen a saw chain tooth at the proper angle.

3,738,201
METHOD AND APPARATUS FOR SHARPENING SAW BLADES

Rudolph L. Allison, Rockford, Ill., assignor to Paramount Textile Machinery Co., Chicago, Ill.

Filed Sept. 24, 1971, Ser. No. 186,520
Int. Cl. B23d *63/00*, *63/12*; B24b *19/00*
U.S. Cl. 76—112 R 5 Claims

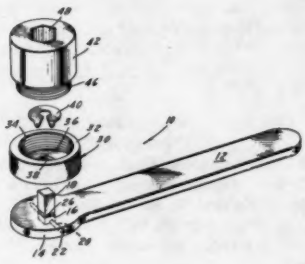
Method and apparatus for orienting saw blades cutting teeth wherein all correspondingly oriented lateral cutting surfaces of teeth that are abraded and/or brazed are congruently oriented with respect to any plane perpendicular to the axis of rotation of the blade body, essentially independently of any waviness in the blade body. Laterally floating clamps on opposite sides of the blade body operate to sense the location of that body and releasably clamp the body essentially without disturbing waviness. Abrading is carried out at essentially the same relative orientation during each successive abrading operating, while the blade is gripped.



3,738,202
LOCKED SOCKET WRENCH

Robert J. Nielsen, 1412 Hillside Drive, Glendale, Calif.

Filed July 12, 1971, Ser. No. 161,727
Int. Cl. B25b *13/06*
U.S. Cl. 81—121 B 4 Claims

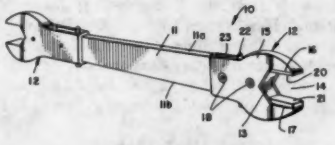


There is disclosed a hand tool apparatus comprising a locking nut having a radial circular wall in which the inner face thereof is threaded, the nut being open at one end and closed at the opposite end by a wall having a central opening therein which receives a square shaft that is fixedly pinned to a wrench handle. The nut is rotatably secured about the shaft by means of a retainer ring that is received in an annular groove about the lower end of the shaft. Various sized socket fittings having external threads at their lower ends are threadably attached within the locking nut and are held from rotation by the shaft which is received within a central bore of the socket.

3,738,203
OPEN-ENDED WRENCH WITH ADJUSTABLE SOCKETS

Marvin L. Cudd, 5523 Capitol St., N.E., Roanoke, Va.

Filed July 6, 1971, Ser. No. 159,702
Int. Cl. B25b *13/58*
U.S. Cl. 81—185 7 Claims



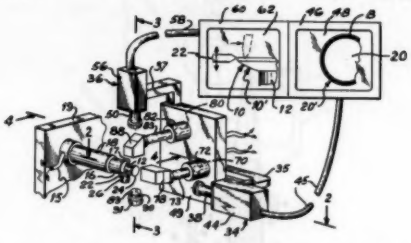
An elongated wrench body is provided in its end with a V-shaped notch which defines two adjacent sides of a four-sided

open socket. A removable head is positioned on the body and projects therefrom to define two parallel opposing sides of the socket. A pair of strip-like spacers are slidably interposed between the head and the opposite side edges of the body and are projectable so that they are juxtaposed to the opposing sides of the socket for adjusting the effective span of the latter. The spacers are contained in recesses formed in the body and may be removed from the recesses upon removal of the head.

3,738,204
METHOD AND MEANS FOR MONITORING LENS MACHINING

Robert G. Spriggs, East Northport, N.Y., assignor to automated Optics Inc., Northport, N.Y.

Filed Sept. 7, 1971, Ser. No. 177,955
Int. Cl. B23b *3/00, 3.28, 7/00*
U.S. Cl. 82—1 C 10 Claims

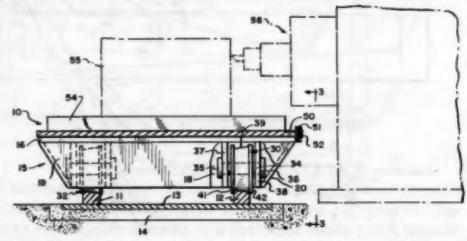


A first light beam is transmitted via a beam splitting prism axially through the lens to a light reflective support behind the lens while the lens is being machined. The reflected beam is retransmitted axially through the lens and prism to a television camera connected to a television receiver having a display screen on which appears an image of the face of the lens being machined. A second light beam is transmitted via another beam splitting prism laterally through the lens to a light reflective surface positioned laterally behind the lens. The reflected beam from the reflective surface is retransmitted laterally through the lens and other prism to another television camera connected to another television receiver having a display screen on which appears an image of the side of the lens being machined. A band is developed on the projected image formed from the axially projected beam thereby displaying tool contact on the lens by reducing transparency of the lens thereat.

3,738,205
SELF-CENTERING TURNTABLE FOR MACHINING LARGE CIRCULAR OBJECTS

Arthur Winslow Harris, Germantown, and Robert Louis Adkins, Memphis, both of Tenn., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed May 18, 1971, Ser. No. 144,484
Int. Cl. B23b *3/22, 3/00*
U.S. Cl. 82—4 R 10 Claims

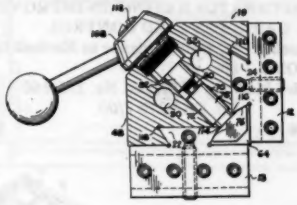


A large diameter self-centering turntable for field machining having an approximately circular horizontal track, a plurality of wheels riding on and spaced about the track, each wheel being mounted on an axle horizontal to the track and radial to the circle described by the track, with each wheel being axially displaceable on its axle for a predetermined distance to accommodate out of roundness of the circular track, a bearing support holding bearing means for each axle, a circular ring, means mounting the circular ring horizontally on the bearing supports, and a drive for rotating the circular ring around the track on the wheels.

3,738,206
QUICK RELEASE TOOL POST

Hubert J. Parsons, Horseheads, N.Y., assignor to Hardinge Brothers, Inc., Elmira, N.Y.

Filed Mar. 22, 1971, Ser. No. 126,578
Int. Cl. B23b *29/26*
U.S. Cl. 82—37 18 Claims

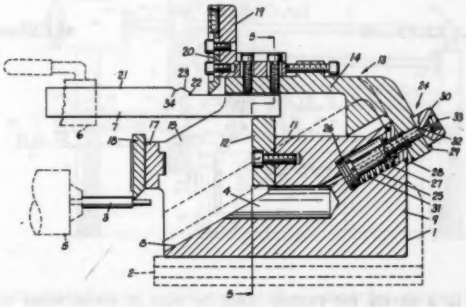


A quick release tool post for machine tools including a body having a pair of adjacent side faces, a recess formed in each of said adjacent faces for selectively receiving a tool holder, a clamp member at the intersection of the two adjacent faces and cooperating with the recesses for clamping a tool holder in at least one of the recesses, the clamp including a portion having a longitudinal axis substantially bisecting the angle formed by the two adjacent faces and passing through the body of the tool post, a handle associated with the clamp for imparting reciprocatory motion to the clamp along the longitudinal axis thereof, the handle being positioned for rotation about the longitudinal axis and constrained against reciprocation along the longitudinal axis. Also, a dust cover for the recesses of the tool post is disclosed.

3,738,207
TEMPLATE CONTROLLED TOOL FEED FOR MACHINE TOOLS

Winfred E. Yaple, Albuquerque, N. Mex., assignor to Continental Machining Co. Inc., Albuquerque, N. Mex.

Filed Nov. 15, 1971, Ser. No. 198,846
Int. Cl. B23b *3/28*
U.S. Cl. 82—14 R 9 Claims



A driven work holder rotates the work about an axis with a fixed template in spaced parallel relation to the axis and with

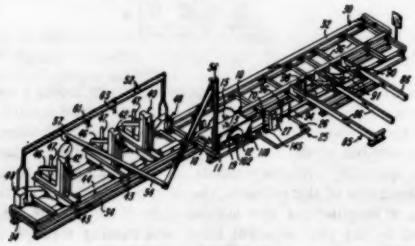
an edge contoured transversely to the axis to the desired shape of the finished work. A tool feed base mounted to advance parallel to the axis of the work has spaced slideways on opposite sides of the axis inclined outwardly away from the work. A yoke shaped tool holding member is slidable on the inclined ways and carries a cutting tool bridged across its front end. A template support on the tool feed base engages a straight lower edge on the template, while a follower on the tool holding member engages the opposite contoured edge of the template. A yieldable connection between the feed base and the tool holding member holds the two parts in fixed relation with a uniform tool feeding pressure until engagement of the follower with a non-linear contour on the template causes the holding member to slide up along the inclined ways, and move the tool transversely away from the work axis to a new working radius.

3,738,208

SAWMILL APPARATUS HAVING AN IMPROVED LOG CARRIAGE FEED CONTROL

James R. Hartzell, Troy, Ohio, assignor to Hartzell Industries, Inc., Piqua, Ohio

Filed Mar. 16, 1972, Ser. No. 235,160
Int. Cl. B27b 7/00
U.S. Cl. 83—76 **11 Claims**



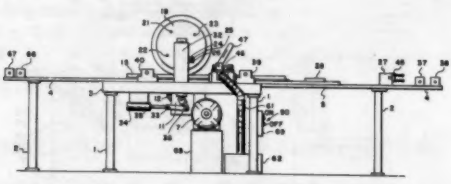
A log transport carriage is supported for linear movement past a motor driven circular saw and is operated by a variable speed hydraulic motor remotely controlled by a valve actuated by a manually operated control lever. The speed of the saw is sensed by a hydraulic pump and governor unit which operates a fluid cylinder positioned adjacent the control lever for automatically and adjustably limiting the maximum speed of the carriage during the cutting of a log so that the saw rotates at a substantially constant speed for producing a precisely uniform flat surface on the log.

3,738,209

DEVICE FOR PUNCHING HOLES IN METAL TUBES

Raleigh F. Davis, 2116 S. Vernon, Dallas, Tex.

Filed Oct. 4, 1971, Ser. No. 186,293
Int. Cl. B26d 7/06
U.S. Cl. 83—98 **40 Claims**



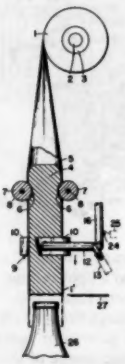
In a device for cutting holes or slots in metal tubes to produce bracket or shelf standards a wheel is included having removable blades adjustably fixed along its circumference and protruding therefrom to present a multitude of cutting surfaces. Tube tray means are provided for carrying the metal tubes. Special flexible arbors pivotally fixed at one end to the tube tray are provided for insertion in the tubes for receiving the slugs or cut out portions. Means are provided for raising and lowering the wheel and means are provided for moving the tube tray along a slide track to rotate the lowered wheel and effect the cutting of holes along the metal tube. Indexing means on the wheel facilitate commencement of correct cutting at any selected point along the metal tube.

3,738,210

METHOD OF DILATING A FLATTENED TUBE TO A DESIRED CROSS-SECTION AND DELIVERING A PREDETERMINED LENGTH OF DILATED TUBE

Masaki Fujio, 3-15-8 Aoyamadai, Suita, Japan

Filed Mar. 23, 1971, Ser. No. 127,119
Int. Cl. B26d 7/14
U.S. Cl. 83—175 **4 Claims**



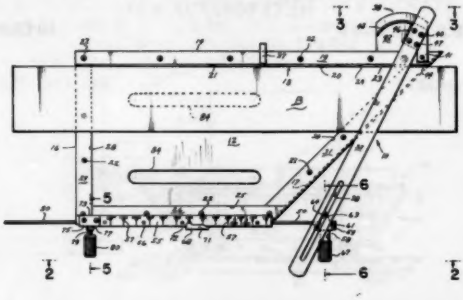
The leading end of a film tube folded flat in the form of a roll is fitted over a guide element arranged to be movable in the axial direction thereby to cylindrically expand or distend the end portion, and then the external surface of this end portion is encircled by an annular hoop-like suction applying means arranged to be axially reciprocable at a constant stroke and so designed that it produces a suction force when it moves forward and that such force is eliminated when it moves back, thereby allowing the expanded tube end to project forwardly of the guide element portionwise at a constant rate.

3,738,211

ADJUSTABLE SAW GUIDE

Arthur D. Carter, Sr., 207 Castle Ridge, Austin, Tex.

Filed Oct. 4, 1971, Ser. No. 186,099
Int. Cl. B27b
U.S. Cl. 83—522 **5 Claims**



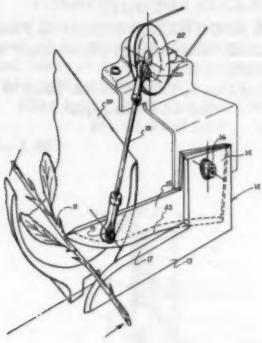
An adjustable saw guide comprising a movable arm selectively secured at a predetermined angle for guiding a hand

operated power saw, means for elevating said arm to accommodate a board of any desired thickness, means for securing said arm away from the working area when not in use, and means for positioning said arm preparatory to securing the same.

3,738,212
APPARATUS FOR TRIMMING THE STEMS OF CUT FLOWERS

Richard J. Goodale, P.O. Box 268, Watsonville, Calif.

Filed May 14, 1971, Ser. No. 143,495
Int. Cl. B26d *5/14*
U.S. Cl. 83—602 **4 Claims**

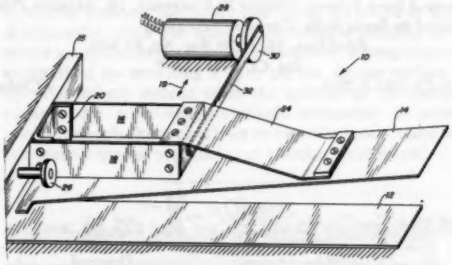


An apparatus for trimming the stems of cut flowers as the cut flowers are conveyed into and past a cutting device. The cutting device is in the form of a shear employing a pair of sharp blades, one of which is movable and is supported by a pivot. The pivot is located well above the line of travel of the flower stems passing through the cutting device and the sharp edge of the movable blade is shaped so that the flower stem being cut by the cutting device is drawn into the device by the cutting action thereof simultaneously as the flower stem is conveyed through the cutting device.

3,738,213
CUTTING MECHANISM

Henry N. Fairbanks, Rochester, N.Y., assignor to Itek Corporation, Lexington, Mass.

Filed Sept. 23, 1971, Ser. No. 182,992
Int. Cl. B26d *5/16*
U.S. Cl. 83—589 **9 Claims**

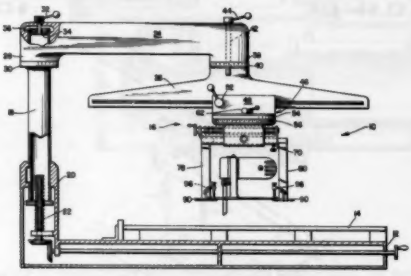


A cutting mechanism for cutting photographic sheet material from a roll in photographic reproduction equipment. The cutting mechanism consists of a first fixed blade and a second movable blade. The second movable blade is supported for a lateral cutting movement relative to the first fixed blade by a pair of parallel strip springs which are mounted in a cantilever manner to a frame. The strip springs are flexed laterally by a drive mechanism which results in the second blade moving laterally relative to the first blade with a constant angle between the cutting edges of the first and second blades. The second blade is biased against the first blade by a third strip spring at one end and a roller at the other end.

3,738,214
RADIAL ARM SAW

Neill R. Wilson, Box 538, Berryville, Va.

Filed May 18, 1970, Ser. No. 38,034
Int. Cl. B27b *5/20, 27/06*
U.S. Cl. 83—761 **19 Claims**

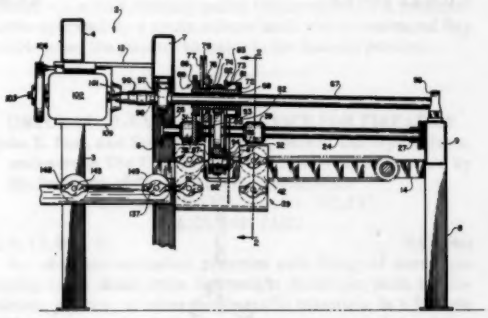


A radial arm saw capable of use with various type portable saws such as saber saws, routers, circular saws, etc. for providing linear cuts and circular cuts of varying diameter. The radial arm saw includes a support column, a transverse arm rotatably mounted at one end on the upper column and rotatably supporting at its other end a trackway on which a carriage assembly has relatively rotatable upper and lower portions, the latter of which supports a tool holding frame adjustable in size to accommodate various type tools and provide circular cuts of varying diameters. In addition, the tool frame is linearly adjustable to the carriage assembly to provide a straight cut as desired.

3,738,215
CUTOFF MECHANISM FOR STRIP MOLDING

Fred A. Craig, San Jose, and Allan M. Hudson, Mountain View, both of Calif., assignors to Thiokol Chemical Corporation, Bristol, Pa.

Filed May 28, 1971, Ser. No. 147,772
Int. Cl. B26d *1/56*
U.S. Cl. 83—289 **2 Claims**



Presented is an automatic cutoff machine for cutting to length strip material as it is discharged in a continuous length from an automatic machine. The cutoff mechanism includes sensing means adjustable to sense a predetermined length of

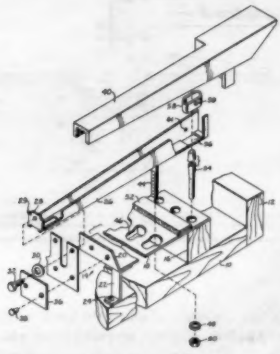
strip and operable to activate a cutoff saw to cut the strip to the predetermined length. Because the strip being cut is moving, the cutoff mechanism must also move with the strip and at the same rate to preclude binding between the cutoff saw and the strip being cut.

3,738,216

KEYBOARD FOR MUSICAL INSTRUMENTS

Mathew A. Slaats, and James E. Blessinger, both of Jasper, Ind., assignors to Jasper Electronics Manufacturing Corporation, Jasper, Ind.

Filed Oct. 28, 1970, Ser. No. 84,588
Int. Cl. G10c *3/12*
U.S. Cl. 84—433 **6 Claims**



A keyboard structure especially for musical instruments and the like, in which an upwardly opening metal channel is supported on a leaf spring at the back to permit vertical movement of the channel while a downwardly opening plastic cap member is mounted on top of the metallic channel and projects from the front end of the channel. A chassis is provided supporting the leaf spring and also having upward and downward stop arrangements for limiting the vertical movement of the key and also includes a lateral guide for the key.

3,738,217

INSULATION HANGER

Myles C. Walker, Medford Lake, N.J., assignor to Omark Industries, Inc., Portland, Oreg.

Filed Oct. 8, 1970, Ser. No. 79,054
Int. Cl. F16b *21/16*
U.S. Cl. 85—8.6 **2 Claims**

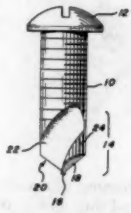
A hanger assembly for securing refractory linings to furnace walls which includes an elongate rectangular stud welded at one end to a supporting wall and the opposite end extending substantially perpendicular from the wall and including therein a plurality of opposed notches cut into the opposed narrower sides. A relatively thin retaining clip formed of sheet material is provided and includes an aperture therein of complementary configuration to the rectangular stud. The clip is inserted over the stud and against the refractory lining and rotated 90° into locked position. In one species, the dimension of the opposed notches provides an interference fit with the clip as it is rotated and in a second species the opposed walls of the notches taper outwardly to permit unrestrained rotation of the clip at the narrow point of the taper but restrain the clip from rotation at the wider point of the taper.

3,738,218

DRILLING AND THREAD FORMING FASTENER

Charles E. Gutshall, Schaumburg, Ill., assignor to Elco Industries, Inc., Rockford, Ill.

Filed Oct. 6, 1971, Ser. No. 186,929
Int. Cl. F16b *25/00*
U.S. Cl. 85—47 **3 Claims**



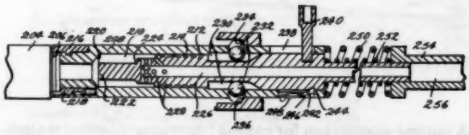
This improved non-walking, non-skittering drilling and thread forming fastening screw, which may be manufactured by simplified, versatile techniques, features a pair of oppositely disposed, substantially longitudinally extending flutes at the entering end, the flutes having at least one curved flute side, at least a portion of which includes the cutting edge, said curved flute side being convexly curved adjacent the cutting edge, a plane tangent to the convexly curved surface at the cutting edge being inclined at an angle to and traversing the axis of the screw at an intermediate point of the shank.

3,738,219

RECOILLESS FIREARM AND CARTRIDGE THEREFOR

Vasco Altuve Febres, Edificio El Convento, 78, Avenida Principal de Santa Sofia, Caracas, Venezuela

Filed Nov. 16, 1970, Ser. No. 89,660
Int. Cl. F41f *15/00*
U.S. Cl. 89—1.703 **9 Claims**



A recoilless firearm, and round of ammunition therefore, are disclosed. The firearm has a bolt having a bore therein for

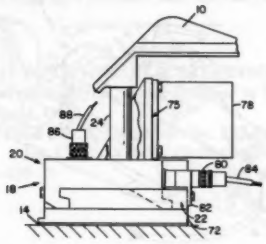
the passage of exhaust gasses from the firing chamber to an exhaust tube at the rear end of the weapon. The exhaust tube contains a restricted opening, such as a venturi, to counter recoil. The round of ammunition has a single gas discharge opening in its rear end, with the ammunition casing having no apertures in the walls thereof. The use of the recoilless firearm, and round of ammunition therefor, of the present invention allows automatic and semiautomatic weapons to be extremely light while powerful ammunition propelling charges.

3,738,220

FLEXIBLE-FIXED LAUNCH AND AIMING SHOE/SELF RELEASING ELECTRICAL AND/OR PYROTECHNIC CONNECTOR FOR ROCKETS

Roy C. Rogers, Jr.; Lawrence W. Howard; James C. Ketechis, and Kenneth K. Magnant, all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 1, 1971, Ser. No. 130,119
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.807 **7 Claims**



A rocket launcher for launching a plurality of rockets from individual launch rails which are mounted on a common platform. Each rocket is provided with a rear shoe assembly including an upper and lower member. The lower member is permanently fixed to the launcher. The upper member is attached to the rocket by a flexible member so that the rocket can move, within limits, and not disturb the shoe. The upper and lower members are permanently secured together and the flexible member is sufficiently rigid so that it can break the restraints between the upper and lower members at launch. Additionally, since the launcher includes a plurality of rails which are mounted on a common platform, aiming may be accomplished by providing a gyro on the aiming surface (the upper member) instead of in the interior of the individual rockets. An electrical/pyrotechnic connector is provided which connects the rocket with an electrical source and which requires no special sequencing of ejection mechanism.

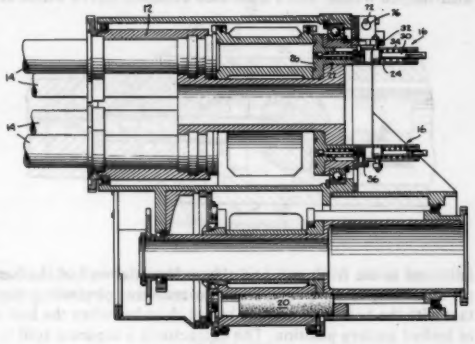
3,738,221

SAFING MEANS FOR HIGH RATE OF FIRE REVOLVING BATTERY GUN

Richard M. Tan, Burlington; Norman R. Johnson, Shelburne, and Lester F. Backus, Charlotte, all of Vt., assignors to General Electric Company, Burlington, Vt.

Filed Sept. 27, 1971, Ser. No. 183,774
Int. Cl. F41d *7/02*
U.S. Cl. 89—12 **6 Claims**

A revolving battery gun has a plurality of bolts with respective firing pins and mainsprings, and switchable firing pin control means having a first disposition for positively precluding searing of each firing pin and a second disposition for positively forcing timely searing of each firing pin.

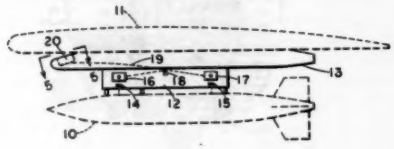


3,738,222

SAFETY PIN ASSEMBLY

William J. Halpern, Langhorne, and Carl A. Damm, both of Upper Black Eddy, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 12, 1971, Ser. No. 142,655
Int. Cl. B64d *1/04*
U.S. Cl. 89—1.5 D **9 Claims**



A safety pin system for bomb racks including a pair of spring releasable pin lock and retraction assemblies interconnected via a load dividing pulley reciprocated by a push-pull cable operated by a single release latch with a contoured flag visible when the pins are lockable in the inserted position.

3,738,223

OBTURATOR-EXTRACTOR DEVICE FOR FIREARMS

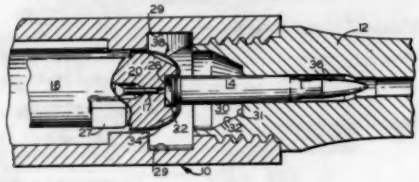
John S. Post, and Frederick P. Reed, both of Davenport, Iowa, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 23, 1971, Ser. No. 201,523
Int. Cl. F41f *11/02*
U.S. Cl. 89—26 **9 Claims**

An obturator-extractor provides safe firing of cartridges having cases made from lightweight materials, such as aluminum, plastics, or other non-metallic materials, in a firearm with a reciprocating bolt comprising a conoidal bolt head that is receivable by a mating chamber in the barrel breech when the bolt is in locked battery position. A single piece obturator-extractor device is mounted as a shell on the bolt head and is comprised of convexly formed surfaces which make sealing contact with the barrel chamber and a tubular section which is

receivable by a recess formed in the head to receive the rear end of the case. An extractor of cantilever configuration is provided on the tubular section of the obturator for engagement with the extractor groove in the case.

In an alternate embodiment, the obturator device includes a dish-shaped washer and a truncated conoidal sleeve which are



mounted in the front end and circumferential wall of the barrel chamber, respectively, to make resilient, obturating contact with the bolt head and the barrel chamber when the bolt is in locked battery position. The extractor is a separate split tubular member which is mounted in the head recess and which is provided with a chordal claw of torsion bar configuration.

3,738,224

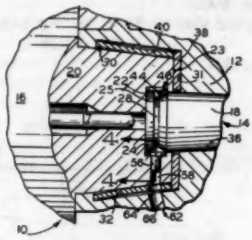
OBTURATED FIREARM BREECH SAFETY DEVICE

John S. Post, and Frederick P. Reed, both of Davenport, Iowa, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 23, 1971, Ser. No. 201,524

Int. Cl. F41f *11/02*

U.S. Cl. 89—26 **3 Claims**



In a firearm comprising a reciprocating bolt, the pin for retaining the extractor against rotation in the nose thereof is adapted to be blown radially from the firearm through a cooperating passage responsive to excessive gas pressure in the barrel for release thereof. In an alternate embodiment the tubular body of the extractor is thinned down where coincident with the inner mouth of the passageway so as to be rupturable by excessive gas pressure for release thereof through the passageway.

3,738,225

METHOD FOR MACHINING GROOVES AND GEAR TEETH

Michel Tixier, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt, France

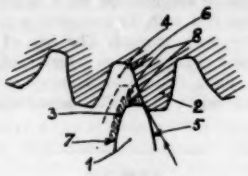
Filed June 12, 1970, Ser. No. 45,765

Claims priority, application France, June 16, 1969, 6919905; May 8, 1970, 7016903

Int. Cl. B23f *9/20*

U.S. Cl. 90—3 **3 Claims**

Method of machining grooves with shape outline by removal of material, more particularly for making gears, characterized in that the feed movement of the tool penetrating into the workpiece is so adjusted that one of the tool flanks penetrates into the workpiece tangentially to the corresponding lateral contour to be obtained in said workpiece, only the



opposite flank and the front face of the tool being used for removing material from the workpiece.

3,738,226

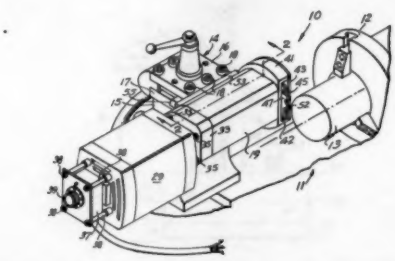
THREAD CUTTING ATTACHMENT FOR LATHES

Henry F. Dickerson, Oldsmar, Fla., assignor to Tampa Brass & Aluminum Corporation, Tampa, Fla., a part interest

Filed Nov. 20, 1970, Ser. No. 91,272

Int. Cl. B23g *1/32*

U.S. Cl. 90—11.64 **10 Claims**



A thread cutting attachment for lathes mounted in the conventional tool holder carried by the longitudinal carriage of the lathe. The attachment includes a rotary cutter driven by an electric motor having a variable speed in a range of from 50 to 10,000 RPM. The attachment is adjustable about a horizontal pivot extending perpendicularly to the axis of the cutter so that the line of cut may be aligned with the pitch of the thread. Both internal and external threads are cut with the attachment by using the thread pitch drive on the lathe carriage.

3,738,227

FLUID POSITIONABLE MEANS AND FLUID CONTROL MEANS THEREFOR

Donald L. Bitzer, Urbana; Lyle E. Bandy, Decatur; Roger L. Johnson, Monticello, and Dominic O. Skaperdas, Champaign, all of Ill., assignors to University of Illinois Foundation, Urbana, Ill.

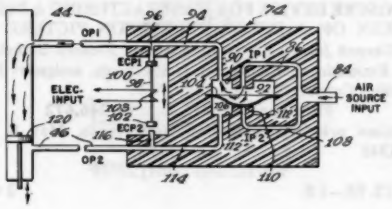
Division of Ser. No. 850,965, Aug. 18, 1969, Pat. No. 3,641,529. This application Nov. 4, 1971, Ser. No. 195,884

Int. Cl. F15b *11/18, 13/044*

U.S. Cl. 91—167 **3 Claims**

Random access information retrieval apparatus for selecting a particular item from a plurality thereof including an improved pair of X—Y coordinate digitally positionable devices which are driven by a 4-way control valve. A polar coordinate random access information retrieval apparatus including a rotatable recording disc having information recorded on at least one surface thereof, a transducer for detecting said information, radial positioning means for moving said transducer radially along said disc, and angular positioning means coupled to said recording disc for incrementally rotating said disc to position desired information on said disc adjacent said transducer. An improved 4-way control valve including a valve housing having a pair of inlet ports for connection to a

pressure source and a pair of outlet ports for connection to a load, a first control chamber communicating one of said inlet ports with one of said outlet ports, a second control chamber immediately adjacent said first chamber and communicating the other of said inlet ports with the other of said outlet ports,



a diaphragm intermediate said first and second chambers and forming a common wall therebetween, and a diaphragm control means for moving said diaphragm to selectively seal one of said inlet ports in said respective first and second chambers to control the fluid flow between said inlet and outlet ports.

3,738,228

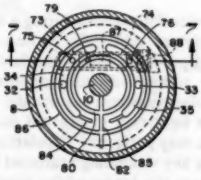
PUMP FOR HYDRAULIC STEERING UNIT

Robert R. Harrison, Elyria, Ohio, assignor to Nemo Corporation, Cleveland, Ohio

Filed Feb. 3, 1972, Ser. No. 223,242

Int. Cl. F01b *3/00*; F04b *49/00*

U.S. Cl. 91—499 **9 Claims**



A pump of the fixed displacement type having a valve assembly which automatically dumps any excess return fluid from the higher volume side of an unbalanced slave cylinder during pressurizing of the lower volume side to prevent a build up of back pressure which might interfere with the operation of the pump.

3,738,229

HYDRAULICALLY OPERATED CYLINDER-PISTON UNIT

Uno Ingemar Kraft, Malmo, Sweden, assignor to Svenska Aktiebolaget Bromsregulator, Malmo, Sweden

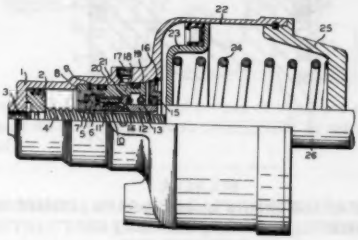
Filed Nov. 10, 1971, Ser. No. 197,726

Claims priority, application Great Britain, Nov. 27, 1970, 56,555/70

Int. Cl. F15b *15/26*

U.S. Cl. 92—17 **5 Claims**

A hydraulically-actuated cylinder-piston unit providing a forward driving force is disclosed which can be releasably locked against a return action when the hydraulic drive terminates. The release mechanism is triggered by a small force and operates independently of the force applied by the piston drive. This is accomplished by a non-locking rotating nut on the piston rod provided with a one-way clutch and a spring



loaded dog clutch independent of the drive train operated hydraulically as a release trigger.

3,738,230

VARIABLE STROKE MULTIPLE PUMP

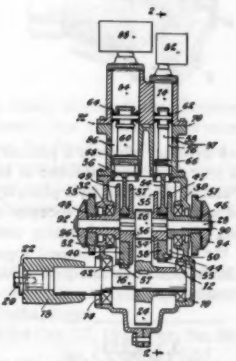
Giorgio Censi, 16 Via Yser, 00198 Rome, Italy

Filed Mar. 2, 1971, Ser. No. 120,282

Claims priority, application Italy, June 26, 1970, 51726 A/70

Int. Cl. F01b *31/14*; F04b *23/06*

U.S. Cl. 92—13.3 **4 Claims**



The pump comprises two cylinders with pistons actuated from a common shaft fitted with eccentrics corresponding to each piston, between each eccentric and the large end of each connecting rod being interposed a disc with an opening which receives said eccentric, said opening being offcentered with respect to said disc so that by rotating said disc with respect to said eccentric the crank radius of the connecting rod and consequently the stroke of the corresponding piston can be varied at will.

3,738,231

PISTON FOR INTERNAL COMBUSTION ENGINES

Hans-Jurgen Zurner, Nurnberg, Germany, assignor to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Nurnberg, Germany

Filed May 28, 1971, Ser. No. 148,082

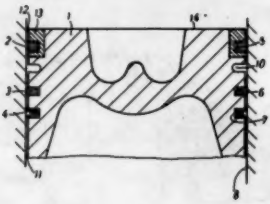
Claims priority, application Germany, May 29, 1970, P 20 26 272.0

Int. Cl. F16j *1/08, 9/22*

U.S. Cl. 92—159 **1 Claim**

A piston for internal combustion engines, in which the peripheral surface of the piston is provided with a plurality of groove means having piston rings mounted therein, in which

between that one of the groove means which is nearest to the piston bottom and the groove means nearest to the last mentioned one of said groove means there is provided recess means for receiving and storing lubricating oil.

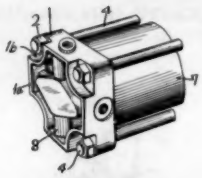


3,738,232

CYLINDER COVERS FOR FLUID PRESSURE CYLINDERS

Taiichi Kado, Osaka, Japan, assignor to Taiyo Iron Works Ltd., Kitaeguchi-cho, Higashiyodo-ku, Osaka, Japan

Filed June 22, 1970, Ser. No. 47,953
Claims priority, application Japan, June 20, 1969, 44/59056
Int. Cl. F01b 29/00
U.S. Cl. 92—161 7 Claims



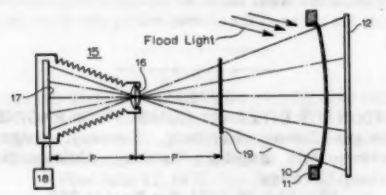
In a fluid pressure cylinder wherein a plurality of tie-bolts are fitted through a pair of covers, attached at both ends of a cylinder body, and clamped thereto by a plurality of nuts, the covers are provided with a plurality of recesses of the corner portions for lodging therein the clamping nuts; after the cylinder body and the covers are clamped together by said nuts, a fitting plate is mounted separately on at least one of the covers, and is attached by further nuts.

3,738,233

CAMERA PROCESS FOR COLOR TUBE SCREEN PRINTING

James W. Schwartz, Glenview, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Jan. 17, 1972, Ser. No. 218,144
Int. Cl. G03
U.S. Cl. 95—1 R 19 Claims



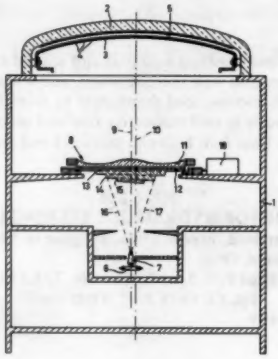
A photographic replica of a shadow mask of given transmission, i.e., ratio of aperture area to mask area, is made with the transmission of the photographic replica of the mask being less than that of the shadow mask. Thereafter, the photographic replica is used in place of the mask for screening the elemental phosphor deposits on the faceplate of a color television picture tube. In the case of a black surround type color tube, the replica is used to initially photoexpose the matrix pattern of phosphor receiving areas and subsequently used to deposit the phosphors. When the screen is fully fabricated, the shadow mask is assembled in position and the photographic replica is discarded.

3,738,234

EXPOSURE DEVICE FOR MANUFACTURING A DISPLAY SCREEN OF A COLOR TELEVISION PICTURE TUBE

Piet Gerard Joseph Barten, and Robert Richard Bathelt, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 24, 1972, Ser. No. 246,672
Claims priority, application Netherlands, May 8, 1971, 7106346
Int. Cl. G03 ; H01j 29/18
U.S. Cl. 95—1 R 2 Claims



An exposure device for manufacturing a display screen of a color television picture tube. The device comprises a correction lens system provided with a lens having a stepped lens profile of annular zones. Adjoining annular zones are connected by an annular transition region; the surfaces of which are parallel to the light rays to prevent scattering. The correction lens system may perform a translation during the exposure so as to divide any remaining scattered light rays over the entire display screen; the center of the corrective lens system describing a path which is closed upon itself. For example a circle of 1.5 mm.

3,738,235

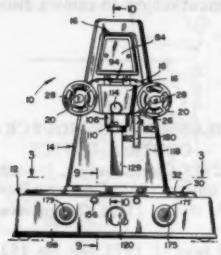
PHOTO-COMPOSITOR

Max Steinberg, Lake Success; Arthur Elian, Great Neck; Louis Verrone, Pearl River, and Roger Klingenberg, Stony Point, all of N.Y., assignors to Apex Photoletter Composing, Inc., Great Neck, N.Y.

Filed June 29, 1970, Ser. No. 50,449
Int. Cl. B41b 15/08
U.S. Cl. 95—4.5 9 Claims

The photo-compositor includes a projection apparatus for projecting selected transparent letter characters from a strip film font on a light-sensitive photographic emulsion carried on a strip of paper. The paper is threaded along the base of the photo-compositor, and extends from a light-tight cassette through an activating station, then across an exposure station wherein the letter characters of the font are projected upon the emulsion surface to expose and develop the letter characters. Subsequently, the exposed portion of the paper is threaded through a station containing a post-developing bath. Indented wells in the base of the photo-compositor form the activating and post-developing stations and the base is of a thermoplastic material vacuum formed in one piece. The

photo-compositor also includes projection elevating means for varying the size of the exposed letter characters by varying the distance between the projection apparatus and the base. The



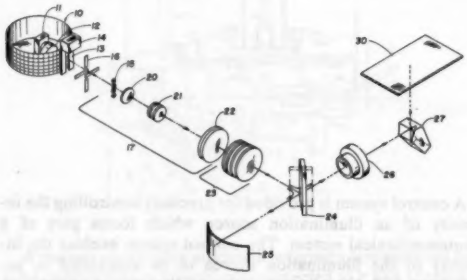
interior surfaces of the cassette over the flat sides of the paper strip are canted to flare toward the center of the sides of the cassette so that these interior surfaces only touch the longitudinal edges of the strip.

3,738,236

PHOTOCOMPOSING MACHINES

Wolfgang Otto Grube, Leonia, N.J.; Joel S. Harris, Valley Stream, and Uri Z. Escoli, Forest Hills, both of N.Y., assignors to Eltra Corporation, New York, N.Y.

Filed May 26, 1971, Ser. No. 146,873
Int. Cl. B41b *17/12*
U.S. Cl. 95—4.5 **8 Claims**



A photocomposing machine having a character drum that is stepped backwards and forwards to bring a group of character images to a photographic position; an optical system images all characters of the group at a common position and a shutter (or equivalent) mechanism selects one character of the group for imaging on a sensitized sheet. A flexible font element having characters arranged thereon in columns and rows is replaceably mounted on the character drum.

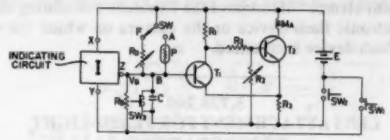
3,738,237

EXPOSURE QUANTITY CONTROL DEVICE FOR CAMERA

Takashi Uchiyama; Tadashi Ito, both of Yokohama; Mutsuhide Matsuda, Tokyo, and Mitsutoshi Ogiso, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 2, 1970, Ser. No. 86,184
Claims priority, application Japan, Nov. 5, 1969, 44/88588
Int. Cl. G03b *7/08, 7/16*
U.S. Cl. 95—10 CT **22 Claims**

The disclosed exposure quantity control device for a camera, includes an exposure quantity determination circuit S and an indicating circuit I for indicating whether or not the camera is operating within an acceptable range. The inputs to said S and I circuits are formed by an output signal at a voltage dividing point of an input circuit that increases photographic



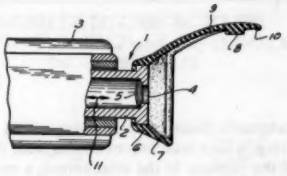
information. An indication of proper or improper exposure is obtained for both EE and flash photography by said indicating circuit.

3,738,238

PHOTOGRAPHIC APPARATUS WITH MEANS FOR OBSTRUCTING THE PASSAGE OF LIGHT THROUGH THE VIEWFINDER

Klaus Hager, Stuttgart, Germany, assignor to Robert Bosch Photokino GmbH, Stuttgart, Germany

Filed Apr. 1, 1971, Ser. No. 130,286
Claims priority, application Germany, Apr. 2, 1970, G 70 11 932.3
Int. Cl. G03b
U.S. Cl. 95—11 V **5 Claims**



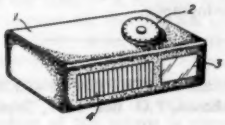
The eyecup which surrounds the eyepiece of the viewfinder in a reflex camera has an elastic extension provided with a plug which can be fitted into an opening in the rear of the eyepiece to prevent entry of light into the viewfinder. The plug has a handgrip portion which can be grasped by fingers to facilitate its withdrawal from or insertion into the opening.

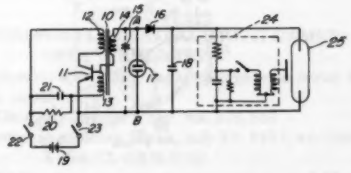
3,738,239

ELECTRONIC FLASH DEVICE FOR PHOTOGRAPHY

Masaru Higuchi, Suita-shi, Japan, assignor to West Electric Co., Ltd., Osaka, Japan

Filed Oct. 27, 1969, Ser. No. 869,722
Int. Cl. G03b *15/05*
U.S. Cl. 95—11 R **2 Claims**





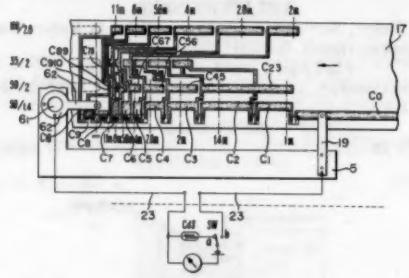
An electronic flash for photography so constructed that an electroluminescent element is connected in the AC high volt-

age generating circuit of a DC—DC converter for the electronic flash device which charges a discharge capacitor adapted to flash a flashlight discharge tube and the electroluminescent element illuminates the exposure calculating dial of the electronic flash device or the camera on which the electronic flash device is mounted.

3,738,240
LENS ATTACHMENT FOR FLASH-LIGHT PHOTOGRAPHING

Taizo Mitani, and Takayuki Shirashaki, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 28, 1971, Ser. No. 184,351
Claims priority, application Japan, Oct. 2, 1970, 45/86939
Int. Cl. G03b *7/20, 7/16*
U.S. Cl. 95—11 R **10 Claims**

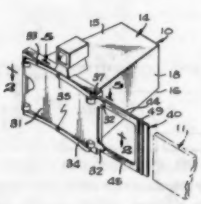


In an automatic flash camera having a lens with a rotatable focusing ring, a lens attachment coacts with the focusing ring to control the camera. In the attachment, a mounting arrangement detachably mounts the attachment to the end of the lens. An interconnecting arrangement, rotatably mounted on the mounting arrangement, engages the focusing ring to move therewith. A variable resistance system is mounted on the two arrangements and is varied by movement of the interconnecting arrangement relative to the mounting arrangement. The variable resistance system includes an adjustable member which is movable between a number of positions. In one position the variable resistance system exhibits one range of resistances corresponding to one type of lens when the interconnecting arrangement is moved. In other positions the variable resistance system exhibits other ranges of resistances each corresponding to lenses of other aperture ratios and focal lengths. An electrical system connected to the variable resistance system responds to the value of the resistance exhibited and controls the diaphragm of the camera for automatic flashlight photography.

3,738,241
CAMERA WITH FILM SPACER

Gerhard I. W. Bahnsen, P.O. Box 1297, South Lake Tahoe, Calif.

Filed May 18, 1970, Ser. No. 38,442
Int. Cl. G03b *19/10*
U.S. Cl. 95—24 **7 Claims**

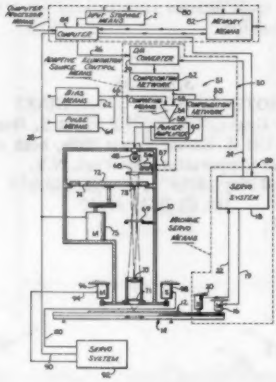


A film pack type camera having a spacer which is removably insertible into the camera at a location to be received in front of the film, in a manner shifting the plane of the film slightly rearwardly relative to the camera lens, to thus correspondingly alter the subject-to-camera distance at which an image of the subject is in focus on the film, and thereby allow for easy and rapid, but precise, conversion of the camera between two different subject-to-camera distance conditions.

3,738,242
ADAPTIVE ILLUMINATION SOURCE INTENSITY CONTROL DEVICE

Barry T. Lee, 22715 Clarendon St., Woodland Hills, Calif.; Gunther W. Wimmer, 19633 Goodvale Road, Saugus, Calif., and Gilbert P. Hyatt, 11101 Omigo Avenue, Northridge, Calif.

Filed June 11, 1971, Ser. No. 152,105
Int. Cl. G03b *29/00*
U.S. Cl. 95—12 **55 Claims**



A control system is provided for precisely controlling the intensity of an illumination source which forms part of a photomechanical system. The control system enables the intensity of the illumination source to be controlled in accordance with the characteristics of the recording medium (photo material), the relative motion between the recording medium and the illumination source, the image to be formed on the recording medium, the dynamics of the system causing the relative motion between the source and the recording medium, variations in the illumination source and over their life, and the illumination source dynamics.

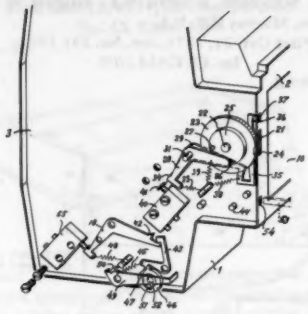
3,738,243
CONTROL MECHANISM AT PHOTOGRAPHIC CAMERAS FOR FILM ADVANCE IN SEPARATE FILM MAGAZINES EQUIPPED WITH A SERVOMOTOR

Kurt Ove Olsson, Goteborg, Sweden, assignor to Fritz Victor Hasselblad, Goteborg, Sweden

Filed Aug. 2, 1971, Ser. No. 168,139
Claims priority, application Sweden, Oct. 2, 1970, 13361/70
Int. Cl. G03b *19/04*
U.S. Cl. 95—31 AC **7 Claims**

This invention relates to photographic cameras with separate film magazines exchangeably attached to the camera housing. A cogwheel projecting out of the camera housing meshes coactingly with a corresponding cogwheel in the film

magazine for the transfer of power to advance the film. The normal driving motion of the cogwheel is utilized for con-

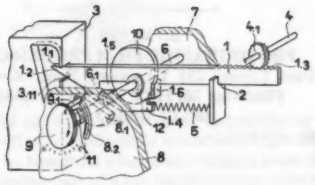


trolling a control mechanism in the film magazine equipped with an electric servomotor to advance the film.

3,738,244
CAMERA WITH AUTOMATICALLY OPERATING EXPOSURE MEANS

Rudolf Leistner, Munich, Germany, assignor to Braun A.G., Frankfurt (Main), Germany

Filed June 11, 1971, Ser. No. 152,281
Claims priority, application Germany, June 18, 1970, P 20 29 930.3
Int. Cl. G03b *19/04*
U.S. Cl. 95—31 FS **9 Claims**



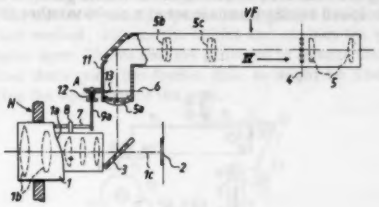
A camera comprising automatic exposure arrangement having a control device operatively connected to it and adapted to transmit to the exposure arrangement film sensitivity values determined by control marks on the picture receiving material inserted into the camera, and a manual adjusting device for moving the control device out of the plane of influence of the control marks and for moving the control device outside such plane over a range permitting the input of a predetermined range of film sensitivity values into the exposure arrangement.

3,738,245
PHOTOGRAPHIC APPARATUS WITH THROUGH-THE-LENS VIEW FINDER

Anton Theer, Munich, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed May 2, 1972, Ser. No. 249,530
Claims priority, application Germany, May 7, 1971, P 21 22 709.8
Int. Cl. G03b *19/12*
U.S. Cl. 95—42 **10 Claims**

A motion picture camera wherein the lens mount is rotatable in the camera body to thereby move the picture taking lens lengthwise of the optical axis. A through-the-lens view finder defines two image planes and is provided with indications or symbols located in or close to that image plane which is nearer to the eyepiece and representing various distances between the lens and the subject. An index in the other image plane is mounted on a lever which is pivotable in the camera body by a follower which tracks a cam of the lens mount so that the index pinpoints that indication or symbol which represents the selected adjustment of the lens. The lever has a first portion

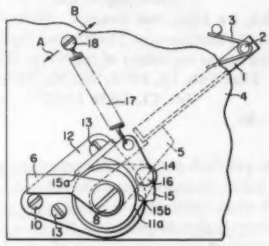


which receives motion from the follower, a second portion which carries the index, and a third portion which connects the first and second portions and is deformable to allow for adjustments of the index relative to the indications independently of the lens mount.

3,738,246
MIRROR SHOCK ABSORBER DEVICE FOR A CAMERA HAVING A QUICK RETURN MIRROR

Akihiko Sato, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed July 12, 1972, Ser. No. 271,192
Claims priority, application Japan, July 15, 1971, 46/62212
Int. Cl. G03b *19/12*
U.S. Cl. 95—42 **5 Claims**



A mirror shock absorber device for use in a camera having a quick return mirror comprises limit means rotatably journalled to the body of the camera for defining a predetermined lowermost position of the mirror. A rotatable member **14** is loosely fitted coaxially with the limit means and a fixed cylinder **11** formed with a circumferential portion **11***a* is fixed to the body of the camera. A retainer member **15** rotatably journalled to the rotatable member has one end thereof engageable with the limit means and the other end engageable with the circumferential portion of the fixed cylinder and frictionally slidable on such portion. A return spring for biasing the limit means into a position for defining the predetermined lowermost position of the mirror is provided between the retainer member and the camera body. The downward force of the mirror may be adsorbed by the sliding friction between the other end of the retainer member and the circumferential portion of the fixed cylinder.

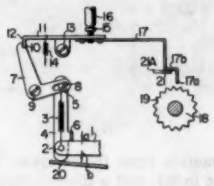
3,738,247
MECHANISM FOR FLASH ATTACHMENT CAMERA SHUTTER CONTROL

Hirofumi Horigome, Kawasaki, Japan, assignor to Ricoh Co. Ltd., Tokyo, Japan

Filed July 25, 1972, Ser. No. 275,105
Claims priority, application Japan, July 29, 1971, 46/56987
Int. Cl. G03b *9/08*
U.S. Cl. 95—53 R **6 Claims**

A mechanism for flash attachment cameras, which when the shutter speed setting means is set at a position for flashbulb

operation, moves a switch out of the path of movement of a lock means to permit the latter, upon depression of the shutter release button, to lock a rotary member, such as an escapement wheel, operatively connected to the shutter closing thus holding the shutter open during flashbulb operation. When the shutter speed setting means is set at a position other than that



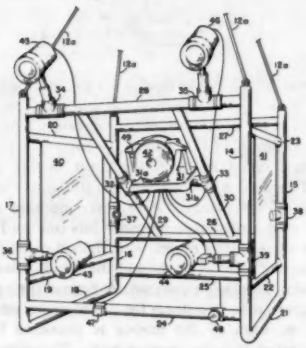
for flashbulb operation, the switch is moved into the path of movement of the lock means to prevent the latter from locking the rotary member. Resilient means is provided between the lock means and the shutter release button to permit the latter to be operated while the former is in its inoperative condition.

3,738,248

PHOTOGRAPHIC MODULE HAVING ACOUSTIC TRANSDUCER

James F. Fish, La Jolla, and Bruce C. Parks, Imperial Beach, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 18, 1972, Ser. No. 227,540
Int. Cl. G03b *15/05*
U.S. Cl. 95—86 **6 Claims**



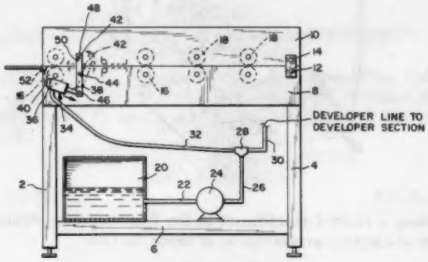
A framework supports and protects an underwater camera and several strobe lights for the nighttime taking of pictures of marine organisms. The framework-camera-and-light module is suspended from a surface vessel and readings are obtained from vertically and horizontally directed transducers to allow a precise positioning of the module. A hydrophone locates the sound making organisms and an additional transducer, carried adjacent to the camera, provides an indication of the distance from the camera to the organisms to permit placement of the camera for proper focusing. Because the transducers and hydrophone allow a precise positioning of the camera in darkness, the organism is photographed in the open and in a natural state when the strobe lights flash in synchronization with the camera shutter.

3,738,249

HOLD DOWN MECHANISM FOR PRINTING PLATE PROCESSOR

Burghard K. Schichlein, Gillette, N.J., assignor to Azoplate Corporation, Murray Hill, N.J.

Filed Oct. 21, 1971, Ser. No. 191,190
Int. Cl. G03d *3/00*
U.S. Cl. 95—89 R **5 Claims**



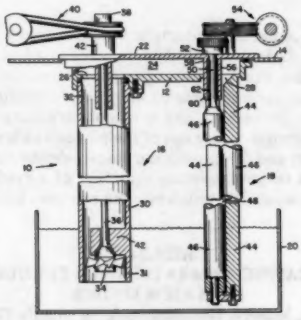
A hold-down mechanism for a printing plate processor divided into a lower fixed section and an upper pivotal section along a plane coincident with the path of travel of the plate therethrough, latch means pivotally mounted on the lower section, hydraulic cylinder means operatively connected to the latch means for pivoting the latch means into and out of locking engagement with the upper section, and pressurized fluid supply means for supplying pressurized processing fluid to the hydraulic cylinder means.

3,738,250

PHOTOGRAPHIC FILM PROCESSOR

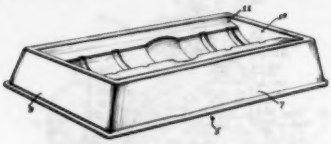
Ronald Paul Layne, 233 Greystone Lane, Rochester, N.Y.

Filed May 26, 1972, Ser. No. 257,388
Int. Cl. G03d *3/02*
U.S. Cl. 95—89 R **2 Claims**



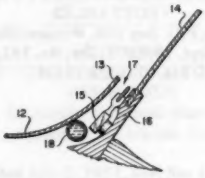
A film processor where processing liquid pumped under pressure into a plenum drains through a discharge outlet into and through a processing chamber below the plenum. Drive rollers for transporting film through the chamber have axle portions extending upwardly through the plenum. Fixed sleeve members surrounding the axle portions extend down into the region of lowered pressure produced by the falling liquid. This prevents upward leakage of pressurized fluid from the plenum around the axle portions without the need for dynamic seal members.

3,738,251
PHOTOGRAPHIC DEVELOPING TRAY
Walter L. Haaser, 3 Loma Linda Drive, El Paso County, Colo.
Filed Dec. 13, 1971, Ser. No. 207,005
Int. Cl. G03d 1/04
U.S. Cl. 95—95 1 Claim



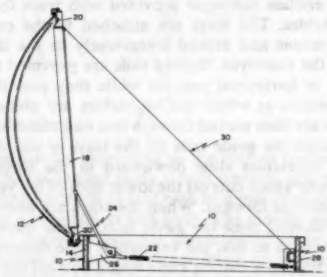
The present invention relates to photographic developing trays and more specifically to a novel tray having a parabolic shaped fluid holding recess with a central portion thereof enlarged and deepened to accommodate the fingers of one holding the print being processed and having sloping drain boards on either side of the fluid recess.

3,738,252
CONCEALED WINDSHIELD WIPER WELL HEATER
Albert J. Cardinale, 4734 Darford Avenue, Baltimore, Md.
Filed July 14, 1971, Ser. No. 162,374
Int. Cl. A42l 1/16
U.S. Cl. 98—2.1 2 Claims



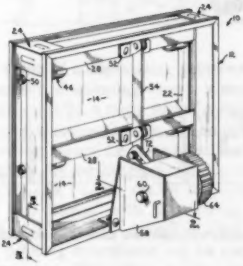
Ice, sleet, and snow accumulated or accumulating in the concealment well of an automobile windshield wiper assembly is melted away by heat from a hot water radiator located in the well and constituting part of a hot water heating system circulated from and including the water jacket of the automobile engine.

3,738,253
FIRE AND SMOKE VENTILATOR
Arthur P. Jentoft, York, Maine, assignor to Wasco Products Inc., Sanford, Maine
Filed Nov. 24, 1971, Ser. No. 201,934
Int. Cl. F24f 7/02
U.S. Cl. 98—86 9 Claims



A roof mounted fire and smoke ventilator includes a simplified mechanism for maintaining the cover closed and which also serves as a snubbing device to cushion the opening shock of the cover when the vent snaps open. The mechanism includes a simple arrangement of cables which are connected between the curb of the vent and the free end of the cover. The cover is spring biased toward an open position but is held closed by the cables by an arrangement including a fusible link which, when melted, releases the cables and enables the vent cover to snap open. Means also are provided to release the cables without destroying the fusible link, as might be desired when testing the operation of the vent.

3,738,254
BACKDRAFT DAMPER
James R. Root, Independence, Mo., assignor to Ruskin Manufacturing Company, Grandview, Mo.
Continuation-in-part of Ser. No. 86,698, Nov. 4, 1970, abandoned. This application May 15, 1972, Ser. No. 253,324
Int. Cl. F23l 17/00
U.S. Cl. 98—119 8 Claims

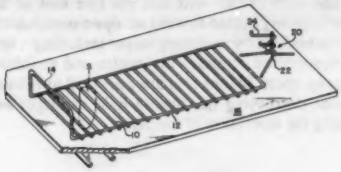


A backdraft damper comprises a frame defining an air control opening and a plurality of vanes mounted on the frame for closing the opening. The frame is assembled from frame sections of lightweight material all having identical cross sections. The frame sections are joined by a corner bracket which is complementally received and engages a large surface area of the sections. The respective sections are pulled together and locked in place as the assembled frame is placed in a jig to stake the corner bracket to the frame sections. The vanes are biased against opening by a spring which is disposed to provide a constant tension on the vanes regardless of the extent to which the blades are already open. The spring is disposed on a shaft and exerts a force tangentially of the shaft. The constant tention assures that any given change in air pressure will result in the same quantity of compensating air flow through the damper regardless of whether the pressure change occurs at near the fully closed or near the fully open position of the vanes. The spring may be wound more or less tightly on its mounting shaft to vary the tension against the vanes as required for different static pressures in different installations.

3,738,255
BROILER
Ben M. Laigo, 1217 Pine St., Seattle, Wash.
Filed Sept. 16, 1970, Ser. No. 72,662
Int. Cl. A47j 37/06
U.S. Cl. 99—450 5 Claims

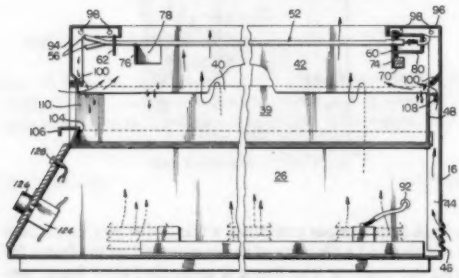
Food supporting metal rods are held together by a frame with the rods resting directly on a griddle or the like. The food is thus heated directly by conduction so that distinct scoring occurs. The scoring may be in the form of a unique pattern, such as circles, letters or the like, for the purpose of placing a

distinctive brand on the food and enhancing its appearance. The rods are spaced sufficiently to allow juices from the food



to drip on the griddle so that the smoke may rise and flavor the food.

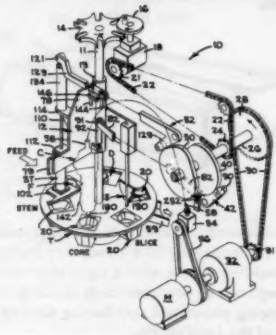
3,738,256
ELECTRIC GRILL TYPE COOKING DEVICE
Stanley V. Joeckel, Wayne, N.J., assignor to Lincoln Manufacturing Company, Inc., Fort Wayne, Ind.
Filed May 19, 1972, Ser. No. 255,065
Int. Cl. A47j *37/08*
U.S. Cl. 99—400 **5 Claims**



A cooking device in which a frame which is open at the top has a substantially horizontal grill, or grate, disposed therein upon which articles, including articles of foodstuff, can be placed for heating and cooking. The grate is made up of metal clad electric heating elements shaped like hairpins and in overlapped relation. The entire grate is tiltable upwardly at one end and the frame includes detachable front and back corner pieces at the top overlying the ends of the grate. Beneath the grate is a drip pan and the frame is so constructed that, together with the drip pan, it defines flue passages extending upwardly inside the walls of the frame and then inwardly over the top of the drip pan into the space beneath the grate. All electrical components are sealed in a compartment in the bottom of the frame and on which compartment the drip pan rests.

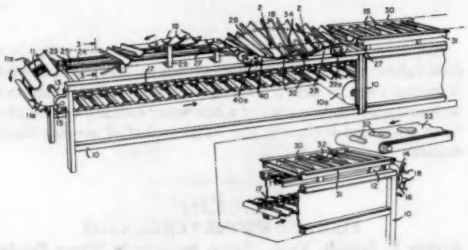
3,738,257
TURRET TYPE CORING UNIT
Ben Louis Manfre, and Peter Werner Forcella, both of San Jose, Calif., assignors to FMC Corporation, San Jose, Calif.
Filed June 16, 1971, Ser. No. 153,552
Int. Cl. A23n *3/08*
U.S. Cl. 99—547 **8 Claims**

A machine for stemming, coring and slicing pears includes a horizontal plane indexing turret having six fruit cups moving to feed, stemming, coring, slicing and idle stations. The cups are pivotally supported by a discharge cam. The tools are mounted on a vertically reciprocating nonrotatable carriage above the turret, so that one individual operation is performed



at each station. The cups have jaws that are opened slightly at the slicing station and closed at the stemming station.

3,738,258
APPARATUS FOR TRIMMING THE ENDS OFF VEGETABLES
Richard J. Goodale, P.O. Box 268, Watsonville, Calif.
Filed Sept. 17, 1971, Ser. No. 181,323
Int. Cl. A23n *15/04*
U.S. Cl. 99—643 **1 Claim**

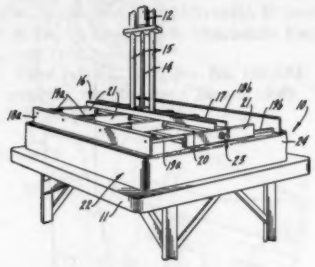


An apparatus for trimming the ends off of vegetables such as carrots, parsnips, zucchini and the like, This apparatus employs an endless conveyor provided with trays for receiving the vegetables. The trays are attached to the conveyor by pivoting means and extend transversely to the direction of travel of the conveyor. Spaced rails are provided for holding the trays in horizontal position while they pass through the loading station at which the vegetables are placed thereon. The trays are then moved through two end trimming zones. In the first zone the guide rails tilt the trays in one direction so that the vegetables slide downward in the trays toward a cutting knife which cuts off the lower ends of the vegetables as they are moved forward. When the trays are moved into the second trimming zone the guide rails tilt the trays in the opposite direction so that the vegetables slide downward in this direction toward a cutting knife which cuts off the other ends of the vegetables. Vibrating means is provided for shaking the trays while they are passing through the trimming zones so that the vegetables slide downward in the trays toward the cutting means.

3,738,259
BOX SPRING PRESS

Theo Hochstatter, Etobicoke, Ontario, Canada, assignor to Sealy, Inc., Chicago, Ill.

Filed June 3, 1971, Ser. No. 149,701
Int. Cl. B30b 15/06
U.S. Cl. 100—295 3 Claims

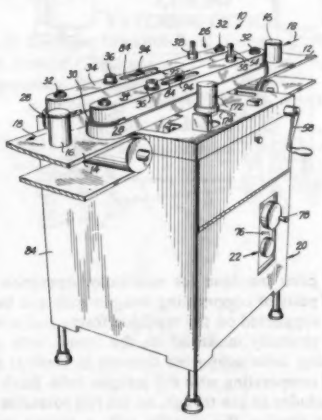


A box spring press including a bed and a source of power to act on a shaft and reciprocally drive an adjustable platen. The adjustable platen comprises a pair of rails that move uniformly in conjunction with each other in opposite directions by the operation of a rack and pinion. A uniform compression of the box spring unit is achieved by aligning the adjustable rails with the edge members of the box spring unit. The compression of the box spring unit in this manner allows a uniform tension to result in ticking that is applied to the unit before its release.

3,738,260
ARTICLE CONTROLLED BOTTOM MARKING APPARATUS

Menashe Navi, Elizabeth, N.J., and Murray N. Levy, Spring Valley, N.Y., assignors to Adolph Gottscho Inc., Union, N.J.

Filed July 2, 1971, Ser. No. 159,376
Int. Cl. B41f 17/16
U.S. Cl. 101—35 18 Claims

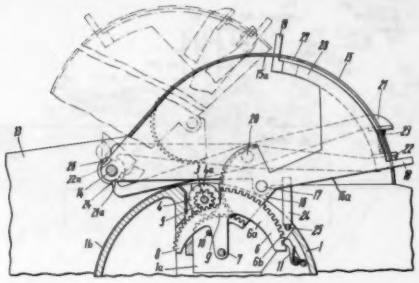


An apparatus for imprinting on the bottom surface of a plurality of objects carried along a path wherein said objects are carried along a portion of said path by a pair of spaced moving belt means positioned in said path. The objects are detected by sensing means selectively displaceable along said path which produce a detection signal when an object to be imprinted passes thereby. Print means positioned below and intermediate the pair of moving belt means is adpated for actuation in response to said detection signal to effect imprinting on said object bottom surface.

3,738,261
PAINT WHEEL SETTING ARRANGEMENT IN DUPLICATING PRINT DRUMS WITH PUNCH CONTROL MEANS

Gerhard Ritzerfeld, Schorlemer Allee 14, 1000 Berlin 33 (Dahlem), Germany

Filed Apr. 26, 1971, Ser. No. 137,404
Claims priority, application Germany, Apr. 27, 1970, P 20 21 992.5
Int. Cl. B41j 7/38, 7/00
U.S. Cl. 101—91 20 Claims

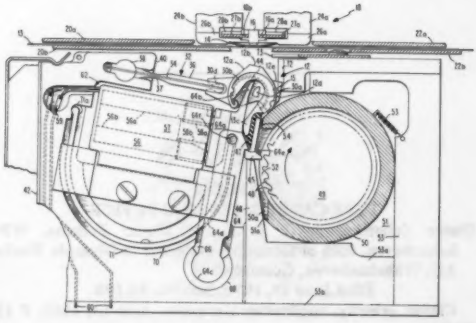


The printing drum of a duplicating machine has a cavity in which an ordinal set of stamping wheels is mounted for making additional imprints on a copy sheet. A casing, which supports a set of manual setting levers, has an operative position in which the setting levers are connected with the stamping wheels, respectively, by meshing gears in the cavity so that the small stamping wheels can be set by the conveniently large setting levers. The casing with the setting levers can be retracted from the printing drum so that the gears are separated, and printing operations can be carried out by the printing drum without obstruction by the casing and setting levers.

3,738,262
ELECTROMAGNETIC ACTUATING MEANS FOR PRINT HAMMERS

Jonas E. Dayger, Binghamton; Albert A. Dowd, Vestal, and Joseph A. Vrablic, Binghamton, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,654
Int. Cl. B41j 9/38
U.S. Cl. 101—93 C 10 Claims

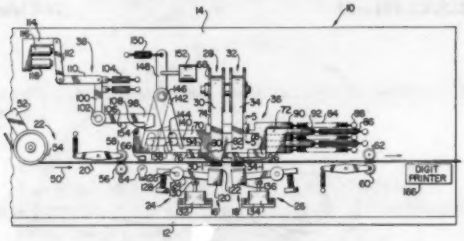


A print hammer is supported by a cantilever spring and carries a pawl which is actuated by electromagnetic means into the path of teeth on a continuously rotating reamer shaft to impel the hammer to impact a document and a ribbon against type characters on a type chain or the like. Movement of the print hammer resets the armature of the electromagnetic means.

3,738,263
PRINTER FOR PRINTING A COLOR BAR CODE

Ollah Combs, Morrow, and Bob G. Lyons, Centerville, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Feb. 22, 1972, Ser. No. 227,946
Int. Cl. B41j 9/12
U.S. Cl. 101—93 C 10 Claims



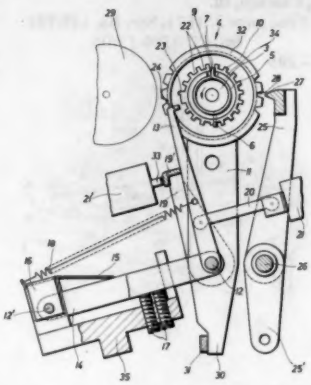
An apparatus for printing color bar codes on a record medium having a plurality of print locations thereon. One printing element like a rack is provided for each print location, and each rack has a print surface thereon. The racks are parallel to one another and mounted for sliding movement between first and second positions. An actuator moves all the racks to the first position where all the print surfaces are aligned at a first print station. Solenoid actuated pawls are used to release selected racks at the first position enabling them to slide to the second position under the influence of springs, at which second position the associated print surfaces are aligned with a second print station. The first and second print stations are provided with first and second color ribbons, respectively. A platen at each print station is used to impact the medium and the ribbon against the print surfaces located at the respective print station. A modification of the printer apparatus provides for moving the racks to an intermediate position where the print surfaces of the affected racks are located between the first and second positions so that the affected print location on the medium can be left blank when particular partiular color bar code being printed requires it.

3,738,264
TYPE CARRIER SETTING DEVICE

Dieter Sobottka, Jever I.O., and Dieter Folkens, Wilhelmshaven, both of Germany, assignors to Olympia Werke AG, Wilhelmshaven, Germany

Filed June 15, 1970, Ser. No. 46,198
Claims priority, application Germany, June 13, 1969, P 19 30 048.2
Int. Cl. B41j 1/54
U.S. Cl. 101—110 10 Claims

A setting device for type carriers having a plurality of characters in printers having a shaft and a loop spring for each type carrier arranged about the shaft. Each type carrier is mounted on a respective loop spring so that the type carrier can be moved into and arrested in a position for printing a desired character. An adjustable detent mechanism is provided which is magnetically actuated by a synchronization

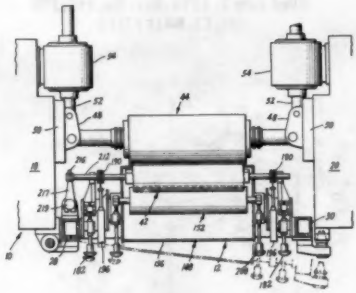


device to set each type carrier. A printing ledge moves the set carriers against a platen to print.

3,738,265
MULTICOLOR INTAGLIO PRINTING MACHINE WITH PIVOTABLE GATE SUPPORT FOR INKING UNITS

Johann Heinrich Saueressig, Wuellen/Ahaus, Germany, assignor to Gebr. Saueressig KG, Ahaus/Wuellen, Germany

Continuation-in-part of Ser. No. 23,564, March 30, 1970, abandoned. This application Dec. 20, 1971, Ser. No. 210,064
Claims priority, application Germany, Mar. 29, 1969, P 19 16 358.8
Int. Cl. B41f 9/02, 9/10
U.S. Cl. 101—152 31 Claims



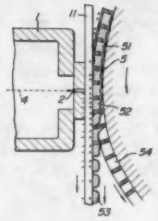
An intaglio print machine for multicolor operation has a multiplicity of pairs of cooperating intaglio rolls and back up rolls rotatably supported on the machine frame and a vertical gate member pivotally mounted on the frame with a multiplicity of inking units supported thereon in vertical spaced alignment and cooperating with the intaglio rolls. Each of the inking units includes an ink trough, an ink roll rotatable in the ink trough for coating the intaglio roll, a doctor member pivotally mounted and extending upwardly into surface contact with the lower portion of its intaglio roll inwardly of the axis of rotation and pneumatic means for pivoting the doctor member downwardly to permit passage by the intaglio roll upon pivoting of the gate member. The height of the free edge of the doctor member may be vertically adjusted and the pressure holding the doctor member against the intaglio roll may be pneumatically adjusted. Desirably, a second doctor member is employed in contact with the upper surface of the intaglio roll and the inking unit includes means for adjusting the pressure of the free edge of the second doctor member

against the intaglio roll. The intaglio rolls are of cylindrical configuration and supported upon the frame by novel cone assemblies and by novel expandable bushings.

3,738,266
ELECTRONIC PRINTING DEVICE

Haruo Maeda, Tokyo, and Eiichi Miyazaki, Irumacho, Chofu-shi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed July 12, 1968, Ser. No. 744,552
Claims priority, application Japan, July 25, 1967, 42/48285; July 26, 1967, 42/48544
Int. Cl. B41f 9/00
U.S. Cl. 101—153 7 Claims

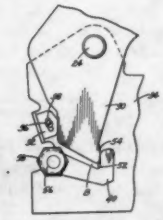


An electronic printing device having an electrostatic printing tube or film penetration tube and a finely meshed screen of dielectric material. In the device, a positive charge is supplied to printing ink retained within the meshes of the screen or to a recording medium of conventional paper material, while a negative charge is supplied to the recording medium or to the printing ink according to a pattern determined by a signal so as to utilize the electrostatic force of attraction between the positive and negative charges for producing a print.

3,738,267
LATCHING DEVICE

James T. Zofchak, Wickliffe, and Norman R. Avery, Chesterland, both of Ohio, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Nov. 25, 1970, Ser. No. 92,754
Int. Cl. B41p 3/04
U.S. Cl. 101—269 3 Claims



A latching device, particularly for latching a head in printing position on a bed in a data recorder. The latching device includes an adjustable stop to precisely position the head in the printing position, and cooperating latch means. The latch means include engagement surfaces and pivoted arms, which move into engagement with the engagement surfaces engaging them at a locking angle. the arms are positionable to insure clearance between the arms and the stop surfaces in the latching position.

3,738,268
COCKING LOCK-UP

Robert Swordy, Yate, and William Peter Herring, Winterbourne, both of England, assignors to Strachan & Henshaw Limited, Speedwell, Bristol, England

Filed June 25, 1971, Ser. No. 156,876
Claims priority, application Great Britain, July 28, 1970, 36,486/70
Int. Cl. B41f 1/28
U.S. Cl. 101—415.1 4 Claims

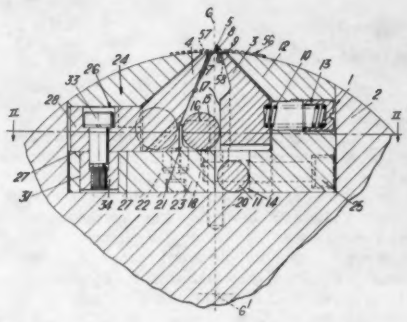
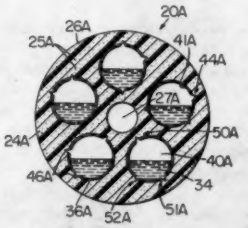


Plate cocking is achieved on a printing machine in operating condition and even when running by imposing a true slewing movement on the leading edge of a plate by a lock-up reference jaw mounted for arcuate movements about a center spaced from the jaw by an amount approximately equal to the printing length of the plate. The trailing edge jaw is a floating jaw. The change in angle of the plate leading edge is "ironed" along the plate towards its trailing edge by operation of the machine.

3,738,269
PRINTING INKING MEMBERS

William T. Wagner, 5237 Weigold Court, Dayton, Ohio

Division of Ser. No. 768,628, Oct. 18, 1968, abandoned. This application July 6, 1971, Ser. No. 159,965
Int. Cl. B41f 31/22, 31/26
U.S. Cl. 101—367 1 Claim

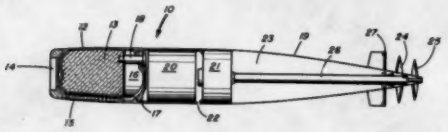


A printing member made of a porous material and having an outer ink-applying surface and ink supply means free of separate vents whereby a printing ink in the supply means is transferred through the porous material to the ink-applying surface by capillary action.

3,738,270
HOMING DEPTH BOMB FOR SEARCHING FOR AN UNDERWATER TARGET

Rochard L. Hargett, Frederick, and Samuel A. Humphrey, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed Mar. 24, 1966, Ser. No. 538,897
Int. Cl. F42b *19/00*
U.S. Cl. 102—7 5 Claims

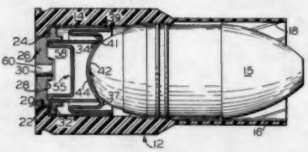


A vertically searching depth bomb-torpedo is disclosed having at least four passive, side looking hydrophones for searching each horizontal layer of water and determining the approximate direction of a target during the vertical dive of the torpedo and a set of forward-looking hydrophones for conducting a snaking search when the torpedo pulls out of its vertical dive heading generally toward the target. A hydrodynamic scheme is illustrated wherein the center of gravity of the torpedo is moved forward of the center of buoyancy to increase dynamic stability, to allow the use of small fins and control surfaces, to reduce drag and to reduce power requirements. In addition, the torpedo has a DC-operated, sea-water flooded, contra-rotating motor.

3,738,271
GRENADE ROUND WITH MEANS GIVING FORWARD MOMENTUM TO THE FIRED CASE

Nicholas J. La Costa, Phoenix, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 18, 1970, Ser. No. 99,698
Int. Cl. F42b *5/02*
U.S. Cl. 102—38 6 Claims



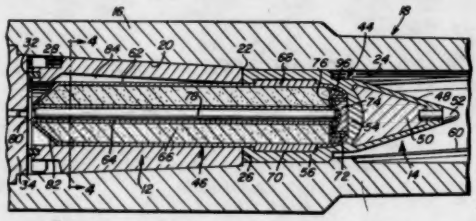
A grenade round containing a case with a telescopic tubular actuator, which is extended responsive to propellant discharge therein against the forwardly disposed grenade, is provided with a propellant wad which is unrolled and then is freed for forward impact agaqnst the extended actuator by residual discharge gas pressure to give forward momentum to the case after the grenade is propelled therefrom.

3,738,272
PROJECTILE

Gregory Grosbard, New York, N.Y., assignor to Radion Development Corporation

Filed Apr. 13, 1971, Ser. No. 133,665
Int. Cl. F42b *9/10*
U.S. Cl. 102—38 18 Claims

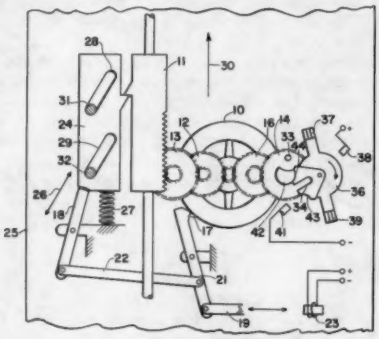
An ammunition round having an adapter casing retained within the breech end of a gun barrel and a projectile held within the casing. A rear tubular portion of the projectile is made of thin sheet material and double walled to enclose a propellant charge about a firing pin extending into engagement with a primer located between the recessed nose of the tubular portion and a partition in the forward housing portion of the projectile separating the primer from the warhead.



3,738,273
SAFETY-ARMING DEVICE

Warren R. Hoelzen, Ontario, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 29, 1960, Ser. No. 59,454
Int. Cl. F42c *15/24*, *9/02*, *15/18*
U.S. Cl. 102—70.2 R 4 Claims



1. In a switch actuating means, the combination comprising an acceleration sensitive weight displaced in proportion to an accelerating force applied to said acceleration sensitive weight, a flywheel drivingly coupled to said acceleration sensitive weight and being driven in response to motion of said acceleration weight, a normally open switch having a movable contact bearing member, gear means coupling said contact bearing member to said flywheel and being actuated to close said switch by the momentum of said flywheel after the acceleration force is no longer applied to said weight.

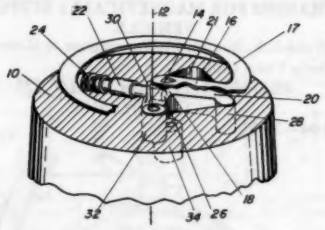
3,738,274
MUZZLE BURST FUZES

Jack Brothers, Succasunna, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 24, 1972, Ser. No. 219,993
Int. Cl. F42c *15/26*
U.S. Cl. 102—70 5 Claims

This invention relates to a muzzle burst inertia responsive fuze for a projectile warhead which is designed to spin about its longitudinal axis. The fuze having a cylindrical housing whose longitudinal axis is parallel to the projectile longitudinal axis, a centrally located shutter cam cavity positioned in the housing immediately adjacent to an explosive train, a shutter camming means positioned in the housing so that it is slidably responsive to the projectile spin when the projectile exits from the launcher and fixedly held motionless when the projectile is

in the launcher, a spin actuated detent means biasedly positioned in the housing for releasably holding the shutter camming means, and a firing pin means operatively held in the housing adjacent to the shutter camming means for engaging and holding the camming means in a stationary safe position



while the projectile is in the launcher, and initiating detonation of the projectile when the camming means has aligned a stab detonation over an explosive train.

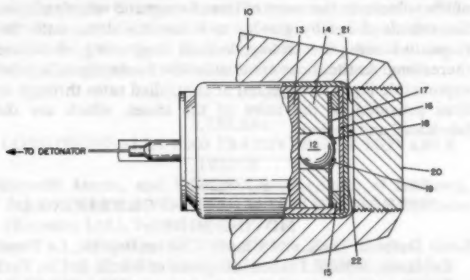
The invention described herein may be manufactured, used and licensed by or for the Government for governmental purposes without the payment to me of any royalty thereon.

3,738,275

AMMUNITION TARGET DISCRIMINATOR

Jacob Schwartz, Rockaway, and George Rosner, Dover, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 22, 1971, Ser. No. 136,465
Int. Cl. F42b *5/08, 9/08*
U.S. Cl. 102—70.2 GA **3 Claims**



In a high explosive projectile which is designed to function on impact and which includes an inertially activated detonator power supply, that improvement which comprises an impact nose plug threaded into the projectile aligned with and spaced from but proximate the power supply. The plug material and the mating threads jointly providing a functioning or non-functioning of the ammunition for selected targets dependent on the shear characteristics thereof. Thus, the system can be made to function for certain targets and be non-funcional for other light targets such as thin structures, tree branches, bushes, etc.

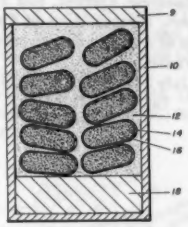
3,738,276

CONTAINER WITH CONTROLLABLY DESENSITIZED EXPLOSIVE MIXTURES

Jean P. Picard, Morristown; H. William Voigt, Jr., Stanhope, and Lawrence W. Pell, West Orange, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 17, 1971, Ser. No. 199,452
Int. Cl. F42c *1/00*
U.S. Cl. 102—7.2 **6 Claims**

A composite semi-liquid system for thickening halogenated organic liquids, such as Freon 113 (a registered trademark of E. I. DuPont de Nemours & Co.) to improve safety in the formulation and handling of certain highly-sensitive-to-detonation mixtures, for example, a mixture of secondary and primary explosives, or a combination of a solid sensitive oxidizer with a pyrotechnic fuel. The thickened halocarbon is used in two stages, first a selected combination of gelling agents such as Cab-O-Sil M-5 (a registered trademark of the Cabot Corporation) and Bentone 38 (a registered trademark of N. L. In-



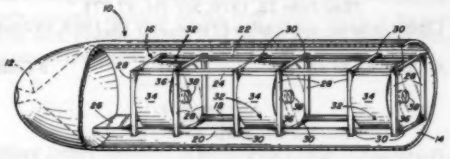
dustries, Inc.) is incorporated into the halocarbon and the resultant slurry is then used to desensitize the explosive by admixture. The desensitized explosive is packaged in a container which is permeable to the halocarbon vapor and this package is immersed in a vessel containing a halocarbon gel obtained by selective gellation with gellants such as Alumagel (a registered trademark of Witco Chemical Co.); this second gel provides a means for preventing a rapid escape of the liquid from the vessel if a leak occurs.

3,738,277

PYROTECHNIC APPARATUS TO ASSIST IN THE TRACKING OF AIRCRAFT

William C. Griffin, Ridgecrest; Lynn Barker, and Kenneth R. Foote, both of China Lake, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Nov. 16, 1970, Ser. No. 89,738
Int. Cl. F42b *13/34*
U.S. Cl. 102—87 **5 Claims**



An apparatus for producing a smoke trail as an acquisition aid to operators of aircraft tracking cameras and tracking radar. A visually detectable trace is produced which enables the tracking operators to locate aircraft that they are required to track for data. The apparatus comprises a housing containing a plurality of pyrotechnic smoke devices suitably connected to a stepping relay so that on each application of a pulse of electricity by the aircraft pilot, the relay will sequentially ignite the pyrotechnic devices thereby forming a smoke trail. The smoke is formed from a mixture of hexachloroethane, zinc oxide, and aluminum.

3,738,278

COLOURED SMOKE PRODUCTION

Wayne J. Bachusky, 54 Russell St. No. 13, Kongston, Ontario, and Rodolphe J. Levesque, 3153 Douai, Quebec, Quebec, both of Canada

Filed June 7, 1971, Ser. No. 150,729
Int. Cl. F42b *13/44*
U.S. Cl. 102—90 **4 Claims**

The invention provides a process for producing an intense, persistent coloured smoke, wherein a mixture of $VOCl_3$ and a

stabilizer, e.g. concentrated sodium hydroxide, which intensifies and prolongs the color of the smoke, is released into the atmosphere. Also, a packaged composition for providing such a smoke, which comprises a sealed frangible container containing a mixture of $VOCl_3$ and a stabilizer of said type.

3,738,279

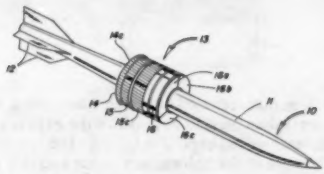
SABOT FOR SUB-CALIBRE PROJECTILE

Frank W. Eyre, Montreal, Quebec, and Fergus M. Groundwater, St. Lambert, Quebec, both of Canada, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 24, 1970, Ser. No. 58,027

Int. Cl. F42b *13/16*

U.S. Cl. 102—94 **7 Claims**



A sabot for locating a finned missile in a rifled gun barrel, consisting of a rear sealing ring, an intermediate wedge unit and a front petal unit. The sealing ring and wedge unit have peripheral grooves to slidably fit a rifled barrel and the petal unit has a smooth periphery for sliding engagement with lands of the rifling. The petal unit and the wedge unit each consists of a set of separable complemental segments and the two units have complementally frusto-conical adjacent end faces so that the wedge segments are urged outwardly and the petal segments inwardly by a forward axial force on the sealing ring.

3,738,280

BEAM-TRACK ASSEMBLY FOR AIR-LIFT OR MAGNETIC-LIFT VEHICLES

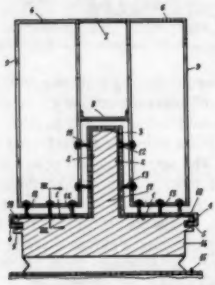
Maurice Barthalon, 78, Avenue Henri Martin, Paris, France

Filed June 22, 1970, Ser. No. 47,971

Claims priority, application France, July 18, 1969, 6924644

Int. Cl. B61b *13/08*

U.S. Cl. 104—23 FS **5 Claims**



This invention relates to an improved beam-track assembly for land vehicles of the air-lift or magnetic-lift type, wherein the track and beam constitute separate units joined together by connecting and adjusting means. Said means preferably comprise a layer of deformable material which is disposed between track and beam and is capable of working in compression and in extension.

In an advantageous embodiment of the invention, the track is tensioned at the time of erection by means of longitudinal adjusting shims so as to produce a prestress within the beam ; the upper chord of said beam is maintained in compression and the lower chord is subjected to a higher compressive stress which counteracts the oppositely-directed stresses resulting from the passing of vehicles.

3,738,281

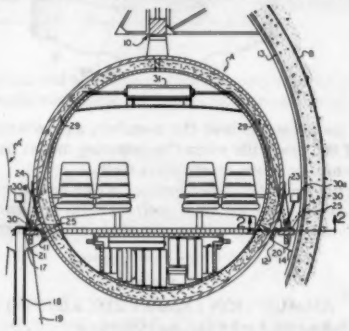
EMERGENCY SUPPORT AND DECELERATING MECHANISM FOR MAGNETICALLY SUPPORTED VEHICLE

Jack P. Waidelich, Bonita, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed May 6, 1971, Ser. No. 140,735

Int. Cl. B60v *3/04*

U.S. Cl. 104—23 FS **6 Claims**



An emergency support and decelerating mechanism for a high speed, magnetically supported vehicle comprises one or more pairs of liquid-vapor bearing type shoes mounted one on each side of the vehicle, each shoe overlying, and spaced from, a support rail mounted one along each side of the path of the vehicle. In the event of loss of magnetic vehicle support, the vehicle drops by gravity to lower the shoes onto their respective rails, for sliding, vehicle supporting, movement therealong. As the shoes are thus lowered onto the rails, jets of vaporizable liquid are ejected at controlled rates through orifices provided in the soles of the shoes, which are thus lubricated and cooled.

3,738,282

METHOD AND INSTALLATION FOR BRAKING A MOVING BODY

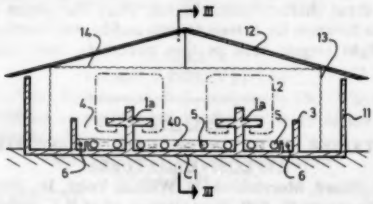
Louis Duthion, Paris, and Claude Charles Doyotte, Le Plessis-Robinson, both of France, assignors to Bertin & Cie, Paris, France

Filed Sept. 14, 1970, Ser. No. 71,676

Claims priority, application France, Sept. 12, 1969, 6931079

Int. Cl. B61k *7/00*

U.S. Cl. 104—249 **18 Claims**



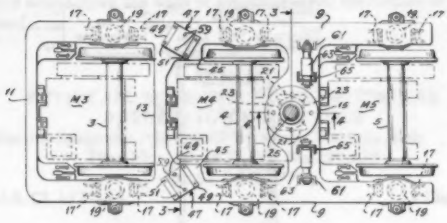
A method of braking a body which moves along a surface in an ambient medium, said method comprising forming liquid-gas foams in the path of the moving body, the density of these foams being greater than that of the ambient medium and preferably increasing in density in the direction of movement of the moving body.

3,738,283

RESILIENTLY CENTERED RAILWAY MOTOR TRUCK

Francis Travers Burgess, Kirkwood, Mo., assignor to General Steel Industries, Inc., St. Louis, Mo.

Filed May 5, 1971, Ser. No. 140,429
Int. Cl. B61c 17/00; B61f 1/14, 3/06
U.S. Cl. 105—136 10 Claims



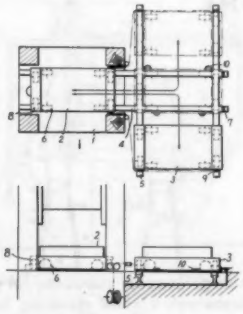
A resiliently centered bolsterless truck for railway locomotives has a rigid frame spring supported from the axles and is arranged to support a locomotive underframe at points spaced apart longitudinally of the truck to stabilize the truck frame against tipping longitudinally and thereby eliminate load transfer from axle to axle which would otherwise result from such tipping. The supports for the underframe from the truck frame comprise three elastomeric pad devices, one of which is annular and surrounds the truck center pin about which the truck swivels. The other two support devices are spaced lengthwise of the truck from the annular pad and are transversely aligned with respect to each other. Each pad device is held against horizontal movement with respect to the truck frame and includes means for securing it against relative horizontal movement with respect to a supported locomotive underframe, so that swivel and transverse movements of the underframe on the truck are accommodated by horizontal shear in the elastomeric pads, thus eliminating metal-to-metal frictional engagement of the underframe and truck frame.

3,738,284

LONGITUDINALLY AND TRANSVERSELY MOVABLE TRUCK

Hisayoshi Atsuta, and Yokichi Koetsuka, both of Ishikawa, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho (Komatsu Ltd.), Tokyo, Japan

Filed Apr. 23, 1971, Ser. No. 136,903
Int. Cl. B60s 13/02; B61f 13/00; B61j 1/10
U.S. Cl. 105—177 6 Claims



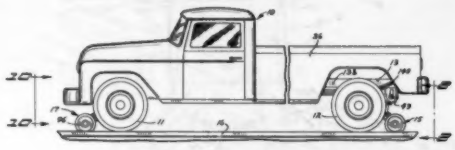
A longitudinally and transversally moving bolster truck is provided with two sets of wheels for use in the two different travelling directions respectively. Wheel lifting means are arranged to bring alternatively one set of wheels into contact with rails. Each of wheel lifting means comprises a wheel. The wheel is journaled in an arm pivoted on the body of the truck so as to permit vertical oscillation. Links are pivoted at the free end of said arm so as to permit oscillation in the same direction. A screw shaft which can be rotated by means of a motor is horizontally journaled in the body of the truck. Said links reciprocally engage at the free ends thereof with said screw shaft through a female screw member.

3,738,285

CONNECTIBLE RAIL-HIGHWAY VEHICLE

Buford W. Olson, Sr.; Eldrid Nelson, and Albin A. Davidson, all of Minneapolis, Minn., assignors to Chas. Olson & Sons, Incorporated, Minneapolis, Minn.

Filed Feb. 25, 1971, Ser. No. 118,790
Int. Cl. B61d 15/00; B61f 9/00; B62d 61/12
U.S. Cl. 105—215 C 32 Claims



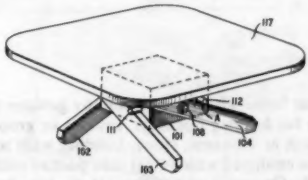
Guide wheel assemblies mountable on a highway vehicle for movement between a retracted position and a rail travel position to guide the vehicle while the vehicle's flangeless wheels provide the driving power. Each assembly includes left and right guide wheels mounted for independent pivotal movement about a first axis and resiliently urged toward a datum position relative a subframe on which they are mounted, the subframe being mounted for pivotal movement on mounting members and overcenter lock mechanism for selectively moving the subframe to, and locking the subframe in a road travel position, and a rail travel position. The rear assembly includes an overcenter lock shaft mounted for limited vertical movement by the mounting members and cable mechanism connected to the vehicle rear spring mounted axle, extended over the shaft and mounted on the rear mounting members to permit the shaft to move upwardly and transmit a downward force through the lock mechanism and subframe to maintain a nearly constant pressure on the rear guide wheels in an overcenter lock position as the load on the vehicle box increases and moves the mounting members downwardly.

3,738,286

ADJUSTABLE HEIGHT TABLE

Clifford James Hoffman, 24 Burnt Mill Circle, Oceanport, N.J.

Filed Dec. 1, 1971, Ser. No. 203,650
Int. Cl. A47b 9/00
U.S. Cl. 108—144 10 Claims



In an adjustable height table, each of a plurality of legs is pivotally mounted on a respective side of a leg support structure that is in spaced relation to the table top. Although the table top rests on the tops of the legs, the entire leg assembly including the leg support structure is in effect self-supporting and in that sense independent of the table top. Each of a plurality of leg arresting pins is affixed to the leg support structure at a height that differs from the height of the corresponding leg pivot. Accordingly, table height adjustment is achieved by

simply rotating each of the legs so that the corresponding leg arresting pin bears against a different point on the leg but on the same side thereof.

3,738,287

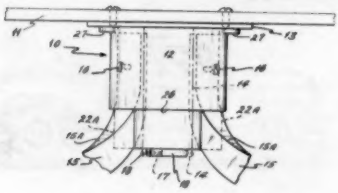
HUB AND LEG MOUNTING FOR PEDESTAL STANDS

Walter Gusdorf, Creve Coeur, and Charles F. Camilleri, Affton, both of Mo., assignors to Gusdorf & Sons, Inc., St. Louis, Mo.

Filed Oct. 20, 1971, Ser. No. 190,976

Int. Cl. A47b *13/02*

U.S. Cl. 108—150 **9 Claims**



A pedestal stand for accessory appliances, such as television and radio receivers, and record players, having a mounting hub connecting the several legs in a secure manner so that the top of the stand is rendered stable and capable of swivelling for directional settings.

3,738,288

THERMIC LANCE

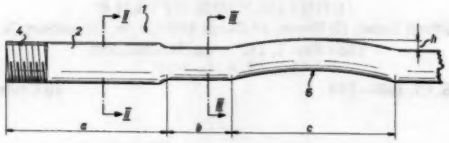
Ernst Brandenberger, Wetzikon, Switzerland, assignor to Kubatec Kunststoff-und Bautechnik AG, Triesen, Fla., a part interest

Filed Jan. 26, 1972, Ser. No. 220,787

Claims priority, application Switzerland, Feb. 5, 1971, 1725/71

Int. Cl. F23b *7/00*

U.S. Cl. 110—1 R **13 Claims**



A thermic lance which is operated by gaseous combustion and serves for forming openings, cavities or grooves in hard material such as concrete, stone, building walls and the like. The lance is equipped with a steel tube packed with a plurality of steel rods. Oxygen is passed through the tube from one end and the lance is ignited at the other end to produce an intense heat source that is applied to the material to be cut. Both the tube and rods become consumed during burning out process. The enclosing tube has with the exception of its ends a cross-sectional shape which is other than circular. For securing the rods in the tube a flat arcuate divergence is provided in the tube and the rods near the gas connecting end part of the lance. Formation of the divergent zone and deformation of the tube in a non-circular cross-sectional shape is effected simultaneously by a single press operation.

3,738,289

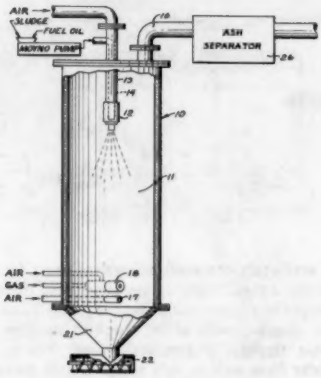
COUNTER-FLOW SLUDGE BURNER

John E. Hanway, Jr., Naperville, Ill., assignor to Chicago Bridge & Iron Company, Aurora, Ill.

Filed Aug. 16, 1971, Ser. No. 172,020

Int. Cl. F23g *5/12*

U.S. Cl. 110—8 R **8 Claims**



Waste-treatment sludge from which water has been largely removed is dispersed downwardly in an upwardly flowing atmosphere within a firebox where the temperature is maintained sufficiently high to dry and burn the sludge while it is in free falling condition, and ash and other products of combustion escaping upwardly to a gas scrubber and ash separator, with relatively clean gas being discharged to the atmosphere. The firebox is preheated by a burner at the bottom thereof. As necessary to maintain the required temperature, there is further burning of fuel at this burner or by addition to the sludge feed. Addition to fuel oil to the sludge before pumping the sludge facilitates pumping, and achieves mixing. Supplementary air is fed at bottom and somewhat tangentially, to impart rotation to the gases within the firebox.

3,738,290

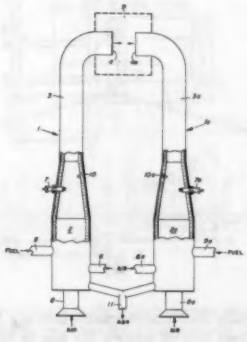
DUAL PULSE-JET SYSTEM FOR THE COMBUSTION OF HIGH ASH FUEL

John W. Belter, Grand Forks, N. Dak., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Oct. 14, 1971, Ser. No. 189,199

Int. Cl. F23g *7/00*

U.S. Cl. 110—28 R **5 Claims**



Coal is burned in vertically oriented, dual opposed pulse-jets. Each jet's combustion chamber upwardly discharges combustion gases through a vertical tailpipe bent at its upper

end in the direction of the pipe on the adjacent jet so as to allow combustion gases to propel back and forth between the adjacent tailpipes. Combustion air is drawn upward through the bottom of each combustion chamber through a centrally located conduit. Refractory material lines the walls of the jets so as to maintain the average gas temperature above the melting point of fuel ash. Entrained ash in the combustion gases is caught on the walls of the pipes and combustion chambers, and drains down the walls as a molten slag to the bottom of the jets.

3,738,291

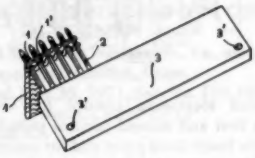
DEVICE AND METHOD FOR LINKING TUBULAR BORDERS TO A FABRIC EDGE

Romolo Spagnuolo, via Fratelli Battinoni, Treviglio, Italy

Filed Mar. 30, 1971, Ser. No. 129,538

Int. Cl. D05b *7/00*

U.S. Cl. 112—25 **13 Claims**



A device for linking U-shaped borders produced by a straight knitting machine to the edge of a fabric in a straight linking machine. The device includes a first stationary comb for receiving stitches on the end edge of the border and a second comb movable between a plurality of positions for transfering these stitches from the stationary comb to the edge of the fabric.

3,738,292

APPARATUS FOR PRODUCING APERTURES FOR JETTED POCKETS ON CUT PARTS OF GARMENTS

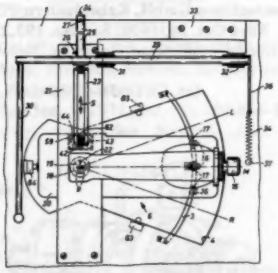
Peter Hintzen, Krickenbach; Fritz Jehle, Alsenborn, and Erich Willenbacher, Karlsruhe, all of Germany, assignors to Firma Pfaff Industriemaschinen GmbH, Kaiserslautern/Pfalz, Germany

Filed June 14, 1972, Ser. No. 262,604

Claims priority, application Germany, June 18, 1971, P 71 23 358.4

Int. Cl. D05b *3/12*

U.S. Cl. 112—65 **6 Claims**



Arrangement for producing jet openings for jetted pockets in cut pieces of garments using a displaceable work piece clamp on a two-needle sewing machine having a pleat guide for the jet strip, a severing cutter for the longitudinal slit operating between the needles and cutting means for producing the angular cuts at the ends of the longitudinal slits, said machine being rotatable about a pivot axis which coincides with the axis of symmetry of the needles and which may be latched in predetermined angular positions (R, M, L), and a number of sets of angular cutters corresponding in number to the angular positions, which sets of cutters comprise angular cutters that are individually guided.

3,738,293

TUFTING MACHINES

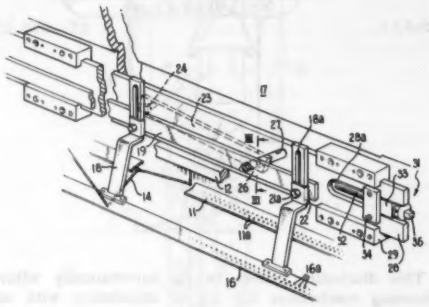
Ronald Parsons, Rishton, Blackburn, Lancashire, England, assignor to The Singer Company (U.K.) Limited, London, England

Filed Aug. 13, 1971, Ser. No. 171,663

Claims priority, application Great Britain, Aug. 22, 1970, 40,560/70

Int. Cl. D05c *15/18*

U.S. Cl. 112—79 R **7 Claims**



An adjustable jerker bar mechanism for a tufting machine includes first and second jerker bars secured to the machine frame and the needle bar respectively, the first such jerker bar comprising a composite structure which includes a movably mounted jerker bar supported by spaced swinging arms and an adjustment means for varying the angular position of such arms relative to a datum and thereby adjusting the relative positions of the first and second jerker bars at an extreme position thereof.

3,738,294

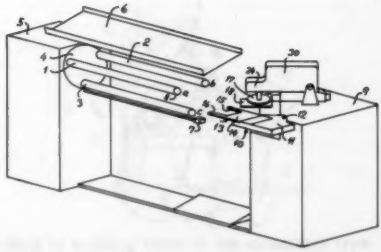
APPARATUS FOR CLOSING THE TOE OF A STOCKING

Bendt Andreas Christiansen, Helsingor, Denmark, assignor to Hans Christian Andersen, Kastanienbaum, Switzerland

Continuation of Ser. No. 764,060, Oct. 1, 1968, abandoned. This application Sept. 29, 1970, Ser. No. 76,604

Int. Cl. D05b *21/00*

U.S. Cl. 112—121.15 **12 Claims**

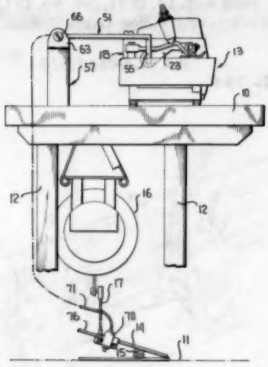


To close the toe end of a stocking, a short length of an open-ended stocking, say 5–10 cm, is drawn on to a flat holder and is transferred by means of this holder to a position between a smooth support and a presser foot having a contour corresponding to the desired shape of the seaming line. The presser foot then moves the flat stocking end past a seaming and cutting device.

3,738,295
AUTOMATICALLY ADJUSTABLE TRIMMING MECHANISM

Farris L. Davis, Fayetteville, and Daniel D. Brown, Springdale, both of Ark., assignors to Union Special Machine Company, Chicago, Ill.

Filed Apr. 13, 1971, Ser. No. 133,683
Int. Cl. D05b 37/02
U.S. Cl. 112—126 10 Claims

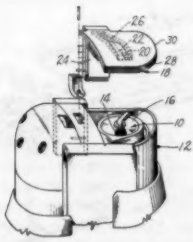


This disclosure relates to an automatically adjustable trimming mechanism for use in association with sewing machines and includes a knife for trimming material being sewn with the knife being shiftable transversely of the direction of material feed for selectively varying the spacing of the trimmed edge of material from the needle of the sewing machine. A simple linkage is provided for shifting the knife and this linkage is actuated by power means which is remotely controllable. The controls for the power means may be mounted on a treadle for controlling the operation of the sewing machine wherein a single treadle may be utilized for controlling the sewing machine and the shifting of the position of the knife.

3,738,296
PHOTOELECTRIC RELATIVE MOTION DETECTOR

Fred T. MacKenzie, Beverly; Robert V. Brophy, Gloucester, and Ralph E. Karcher, Jr., Magnolia, all of Mass., assignors to USM Corporation, Boston, Mass.

Filed Sept. 21, 1971, Ser. No. 182,466
Int. Cl. D05b 69/36
U.S. Cl. 112—219 R 2 Claims

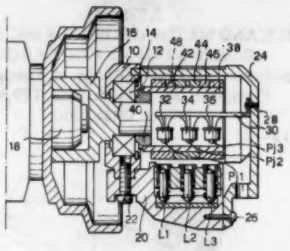


A Photoelectric Relative Motion Detector in which a light source and a photoelectric device are mounted on a plate adjacent one side of an object having portions varying in light reflectivity spaced along a path of relative motion between the detector and the object. The plate shields portions of the object along the path from ambient light and shields electrical leads connecting the device to external circuits from extraneous electrical signals.

3,738,297
ELECTRONIC CONTROL ARRANGEMENT FOR THE NEEDLE AND THREADCUTTER IN AN INDUSTRIAL SEWING MACHINE

Mario Sangiorgi, Vigevano, Italy, assignor to Elettromeccania S.A.S. Mazzini Motori Di Sangiorgi & C., Vigevano (Pavia), Italy

Claims priority, application Italy, June 21, 1971, 6912A/71
Filed June 15, 1972, Ser. No. 263,068
Int. Cl. D05b 69/22
U.S. Cl. 112—219 A 5 Claims

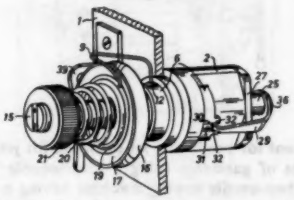


An improved electronic control for industrial sewing machines has first and second control switches for stopping the needle at its lower dead point and for controlling cutting of the thread while positioning the needle at its top dead point. Three transparent rings are keyed, in adjustable positions, to the needle control shaft, each ring having an opaque sector, and each being arranged to rotate between a source of light and respective transistor connected to logic circuits. When the first switch is operated a first transistor excites an electromagnetic clutch for coupling the control shaft of the needle to the low-speed motor and successively excites for a short period an electromagnetic brake which arrests the shaft at its lower dead point: when the second switch is operated the other two photo-transistors cause the electromagnetic clutch to be engaged, followed for a short period by the electromagnetic brake to bring the needle to its top dead point and at the same time energize electromagnetic actuators which advance a cutter blade and slacken a thread-tensioning device of the sewing machine and, after a predetermined delay, energize an electromagnetic actuator which withdraws the cutter blade towards a counter-blade to sever the thread.

3,738,298
TENSION DEVICE FOR NEEDLETHREAD OF A SEWING MACHINE

Ernst Albrecht, Hochspeyer/Pfalz, Germany, assignor to Pfaff Industriemaschinen GmbH, Kaiserlautern/Pfalz, Germany

Filed Oct. 28, 1971, Ser. No. 193,279
Claims priority, application Germany, Nov. 3, 1970, G 70 40 674.5
Int. Cl. D05b 47/00
U.S. Cl. 112—254 3 Claims



The tension device disclosed is of the type which combines a pair of releasable spring-pressed tensioning disks with a torsion spring. When the pressure between the disks is released at the end of an operation, means are also provided to inactivate

the torsion spring to prevent the latter from pulling the thread from the needle eye when the thread is cut or when the next operation is started.

3,738,299

EMBLEMS WHICH WILL GLOW IN THE DARK AND THE METHOD OF MAKING THEM

Mel A. Packler, 246 Locust Road, Wilmette, and Jordan Cokee, 8928 Church St., Des Plaines, both of Ill.

Filed June 22, 1972, Ser. No. 265,212
Int. Cl. D05c *17/00*
U.S. Cl. 112—439 12 Claims

Emblems which will glow in the dark, the same being fabricated by applying a phosphorescent material to the fabric of the emblems and then embroidering a design and/or indicia on the fabric.

3,738,300

METHOD OF FORMING A BEAD ON A CONTAINER BODY

William Thomas Saunders, Weirton, W. Va., assignor to American Can Company, Greenwich, Conn.

Filed June 30, 1971, Ser. No. 158,189
Int. Cl. B21d *19/12*
U.S. Cl. 113—120 AA 5 Claims

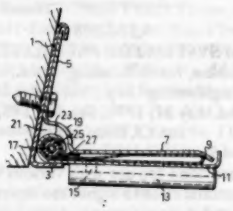
In forming an external, annular raised projection or bead at the end of a container body, a tool having a cutout is brought into contact with a partially down-turned flange on the container body to effect doubling back of the flange toward the container body to dispose an outer marginal edge portion of the flange against the outside surface of the container body and, simultaneously, confine and mold an inner portion of the flange, which is contiguous with the end of the container body, into the cutout of the tool to thereby form the raised projection or bead at the end of the container body.

3,738,301

HINGE STRUCTURE FOR TRIM FLAPS

Bertil Roland Sjoo, Bromma, Sweden, assignor to Hesselman Bil-Aero AB, Hagersten, Sweden

Filed Jan. 5, 1971, Ser. No. 104,094
Claims priority, application Sweden, Jan. 12, 1970, 299/1970
Int. Cl. B63b *1/22*
U.S. Cl. 114—66.5 P 4 Claims



A trim flap is hinged to a water craft by having its front edge cylindrically bent and mounted with free play in a channel formed in a retaining bracket fastened to the craft transom. An actuator bag located between the flap and the bracket is held in place by having its front edge passed around a locking tube located inside the cylindrically bent front flap edge. A pneumatic operating line for connecting a bag opening valve with controls at the driver's seat is passed from the bag into the bag locking tube, extends in the tube to the side edge of the flap and then extends up and into the craft through a vertical locking tube preventing lateral movement of the flap in its bracket channel.

3,738,302

CARGO CONTAINER MOUNTING

Earl J. Flajole, 1135-B Bonita Drive, Encinitas, Calif.

Filed Oct. 2, 1970, Ser. No. 77,430
Int. Cl. B63b *25/00*
U.S. Cl. 114—72 1 Claim

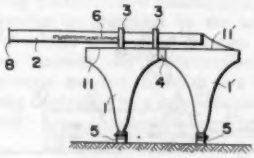
A cargo container mounting on a cargo ship having a plurality of vertically cells for the vertical stacking of cargo containers separated by bulkheads in which a plurality of vertical base channels are disposed at the container corner locations; the vertical channels containing a displaceable shock-absorbing strip such as rubber for cushioning the movement of the containers due to the pitch of the ship when underway.

3,738,303

METHOD OF BUILDING BOATS WITH TWIN HULLS

Shoichi Sakura, Shimizu, Japan, assignor to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed May 25, 1970, Ser. No. 40,152
Int. Cl. B63b *3/02*
U.S. Cl. 114—77 R 9 Claims



A method of building boats of the catamaran type. Thus, during the building of a boar which will have twin hulls, a pair of single hull boats are simultaneously launched, with these boats fixed to each other in side-by-side relation. The thus-launched boats are then separated and laterally displaced one with respect to the other up to a predetermined distance therebetween, while one of the boats is guided for movement with respect to the other along a path extending in a precisely perpendicular direction horizontally across the decks of both boats. This guiding of the boats during their lateral displace-

ment with respect to each other is brought about by fixing at least one beam on one of the boats extending perpendicularly across and beyond the other boat, and then mounting on this other boat a guide frame structure which extends around the beam to cooperate therewith during the lateral displacement of the boats from each other. After the boats have been positioned in this way, they are interconnected with a connecting structure which extends between the hulls.

3,738,304

SHIP STABILIZATION APPARATUS

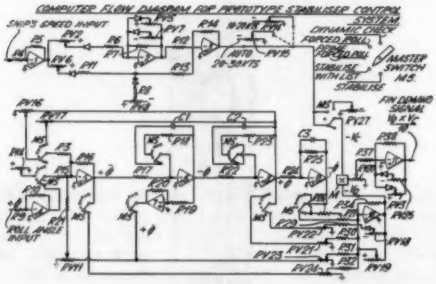
Albert Duberley, West Drayton, England, assignor to National Research Development Corporation, London, England

Filed Oct. 26, 1970, Ser. No. 84,108

Claims priority, application Great Britain, Nov. 3, 1969, 53,743/69

Int. Cl. B63b *39/06*

U.S. Cl. 114—126 **8 Claims**



The invention is concerned with an anti-roll stabilization system for ships of the kind in which a fin, in operation, protrudes from the ship below the water-line and is angularly displaced about its axis by power means in response to a fin control signal, wherein a primary signal produced by a sensing device responsive to rolling motion of the ship is processed by a configuration of operational amplifiers programmed to produce a fin control signal having the required phase advance, gain/frequency characteristic to position the fin to reduce the rolling moment of the ship.

3,738,305

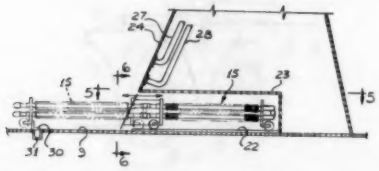
OIL TANK HEATING APPARATUS

George Thomas Richardson Campbell, and Moritomo Wakamatsu, Nishi, both of Tokyo, Japan, assignors to Algoship International Limited, Nassau, Bahamas

Filed Jan. 26, 1971, Ser. No. 109,795

Int. Cl. B63b *25/02*

U.S. Cl. 114—73 **7 Claims**



A movable unit for heating cargo oil carried in the holds or tanks of a vessel, the unit, when required, being disposed on the base of the hold or tank and connected to main steam lines and drain lines of the vessel by removable connections. The unit includes a wheeled carriage which permits it to be moved into and stored in a housing at the base of bulkheads between the holds or tanks, and is sealed therein when the holds or tanks are used for transporting dry bulk cargo.

3,738,306

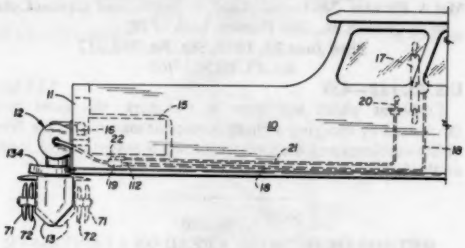
REVERSING MECHANISM FOR INBOARD-OUTBOARD BOAT DRIVE

Lyle C. Pinkerton, 9264 Brighton Road, Henderson, Colo.

Filed June 18, 1971, Ser. No. 154,467

Int. Cl. B63h *5/12*

U.S. Cl. 115—35 **9 Claims**



The reverse drive mechanism rotates a lower propulsion unit 180° from the forward drive position of said unit and eliminates the necessity for changing the direction of rotation of the propeller or propellers rotatably mounted in said unit. The reverse drive mechanism comprises gears built into the main drive mechanism, electrically controlled by an inboard control lever and timing device which automatically terminates rotation of the lower propulsion unit when the unit has been rotated 180° from its former propulsion position.

3,738,307

PROPELLER NOZZLE

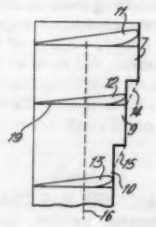
Gunnar Monrad Jacobsen, Skarer, and Asbjorn Mollevik, Strommen, both of Norway, assignors to A/S Strommen Straal Strommen-Raufoss, Strommen, Norway

Filed June 3, 1971, Ser. No. 149,740

Claims priority, application Norway, June 11, 1970, 2274

Int. Cl. B63h *1/14*

U.S. Cl. 115—42 **2 Claims**



A propeller nozzle is provided in which the geometry of the nozzle profile varies. With such a propeller nozzle, the hull stream in the propeller zone can be changed to a field of a more ratationally symmetrical nature.

3,738,308

ALARM SYSTEM FOR PNEUMATIC TIRES

William A. Barabino, North Reading, Mass., assignor to Safety Research & Engineering Corp., North Reading, Mass.

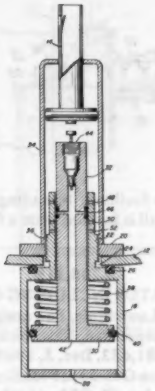
Filed May 21, 1971, Ser. No. 145,624

Int. Cl. B60c *23/02*

U.S. Cl. 116—34 R **4 Claims**

A system is provided for use with various types of vehicles employing pneumatic tires to signal the operator that the tire pressure is beyond a preset range. A spring-loaded pressure responsive piston is adapted to reciprocate within a valve structure in response to changes in tire pressure. If the piston

is displaced one way or other beyond the predetermined range, air is released to operate a whistle detected by a sensing



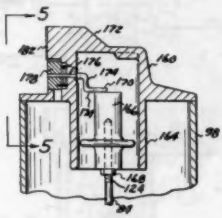
system on the vehicle which, in turn, generates a signal for the operator.

3,738,309
COLLAPSIBLE WARNING DEVICE
Thomas H. Nicholl, 1204 W. 27th Street, Kansas City, Mo.
Filed June 1, 1971, Ser. No. 148,324
Int. Cl. E01f *13/00*
U.S. Cl. 116—63 P **5 Claims**

A warning device for use as a traffic warning device has a base member and top member and a support member engaging and extending between the base member and the top member for holding the top member in spaced relation above the base member and eye-attracting material extending between the base member and the top member.

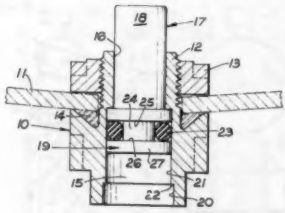
3,738,310
RESERVOIR FILTER AND INDICATOR
Nils O. Rosaen, Bloomfield Hills; Borje O. Rosaen, Ann Arbor, and Oscar E. Rosaen, Grosse Pointe Farms, all of Mich., assignors to Parker-Hannifin Corporation, Cleveland, Ohio
Division of Ser. No. 794,612, Jan. 28, 1969, Pat. No. 3,608,277, which is a division of Ser. No. 569,488, Aug. 1, 1966, Pat. No. 3,440,802, which is a continuation-in-part of Ser. No. 522,773, Jan. 24, 1966, Pat. No. 3,441,137. This application Mar. 1, 1971, Ser. No. 119,899
Int. Cl. G01l *19/12*
U.S. Cl. 116—70 **5 Claims**

A filter device is adapted to be mounted to the exterior of a sidewall of a fluid reservoir and includes a housing section having a fluid inlet connected with the reservoir and fluid outlet. The housing section defines a filter chamber fluidly intermediate the inlet and the outlet and disposed below the fluid level of the reservoir. A tubular section extends upwardly from the housing section and a filter element is vertically



slidably disposed in the filter chamber. A rod extending upwardly from the filter element provides a means for withdrawing the filter element upwardly from the filter chamber.

3,738,311
PRESSURE INDICATORS
Ronald John Walter Appleton, Bromley, Kent, England, assignor to Firemaster Extinguisher Limited, London, England
Filed Jan. 18, 1972, Ser. No. 218,776
Int. Cl. G01l *19/12*
U.S. Cl. 116—70 **9 Claims**



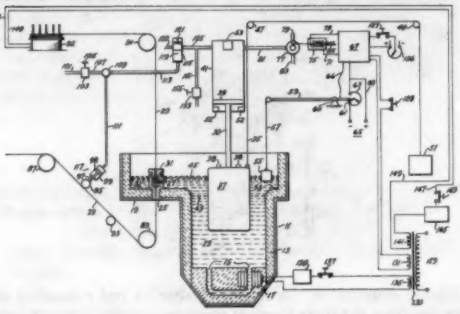
Pressure indicator for fluid pressure containers, e.g., fire extinguishers is of simple construction and enables a user to readily ascertain whether or not internal pressure exceeds a predetermined level.

The indicator includes a fixed member defining a duct to open to the container exterior, and a plunger member forming a closure for and movable longitudinally of the duct, a fluid seal being provided by an O-ring or like elastomeric sealing element mounted on one member in continuous sealing engagement with a face of the other member throughout the range of said movement. Said face includes a step or other constriction giving predetermined resistance to movement of the plunger member on abutment by the sealing element which is only overcome if the fluid pressure acting on the plunger member exceeds said predetermined level. Thus failure of the plunger member to return to a fully extended position following depression by a user indicates the pressure is below said level.

3,738,312
MOLTEN METAL BATH LEVEL MAINTENANCE SYSTEM
George Padjen; Robert W. Helman, and Joseph A. Brugger, all of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.
Filed Dec. 28, 1971, Ser. No. 213,144
Int. Cl. B05c *11/10*
U.S. Cl. 118—2 **7 Claims**

The level of molten metal in a molten metal coating furnace is controlled by the use of a counterweighted hollow ceramic

displacement block having thin walls not subject to spalling.



The hollow ceramic immersion block is associated with a bath level control system having a fail safe feature.

3,738,313

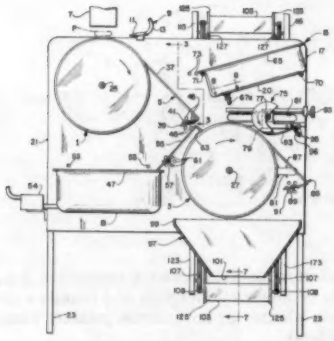
BREADING APPARATUS

Leonard A. Heim, 2307 Arkansas Road, Highland, Ill.

Filed Sept. 9, 1971, Ser. No. 179,051

Int. Cl. B05c *5/00*; A23p *1/00*

U.S. Cl. 118—16 18 Claims



Apparatus for breading food items, particularly meat patties, in which an item to be breaded is deposited on a first rotatable cylinder and wetted with a breading liquid. The wetted item is transferred from the first cylinder to a second rotatable cylinder via a slide which permits drainage of excess breading liquid from the item sliding down the slide, the excess liquid being collected in a sump below the first cylinder. Breading is fed onto the second cylinder at the top thereof for breading the wetted item delivered to the second cylinder. Excess breading is returned to a breading supply. A third rotatable cylinder squeezes to a predetermined thickness the breaded item conveyed forward by the second cylinder.

3,738,314

FILAMENT COATING APPARATUS INCLUDING MERCURY CONTACT HEATING MEANS

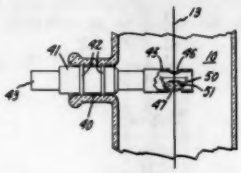
Charles R. Morelock, Ballston Spa, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 714,853, March 21, 1968, Pat. No. 3,565,683. This application Jan. 13, 1971, Ser. No. 106,261

Int. Cl. C23c *13/10*

U.S. Cl. 118—49.5 1 Claim

Heating means in a vapor deposition chamber includes a plurality of electrical contacts. Each contact is formed by a receptacle containing mercury through which the filament



substrate passes. To facilitate threading of the filament, the receptacle bottom wall is formed from a foraminous material.

3,738,315

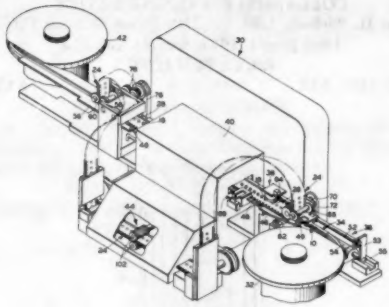
COATING APPARATUS INCLUDING CONVEYOR-MASK

Stanley E. Sweitzer, Laureldale, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 881,652, Dec. 3, 1969, Pat. No. 3,635,730. This application Oct. 21, 1971, Ser. No. 191,267

Int. Cl. C23c *13/08*

U.S. Cl. 118—49.5 10 Claims



Ferromagnetic articles to be selectively coated are conveyed through a coating station by a belt which also serves to mask areas of the articles where coating material is not desired. The belt is in the form of an endless tape and coating material is continuously removed from the tape so that each article to be coated is presented with clean tape mask. Automatic apparatus is provided to magnetically lift the articles into engagement with the mask and a support track in coordination with feeding and indexing devices. A step near the end of the track permits the coated articles to drop free of the mask and accumulate in a magazine.

3,738,316

BRINE SHRIMP HATCHERY

Robert Stasio, Brooklyn, N.Y., assignor to Metaframe Corporation, Maywood, N.J.

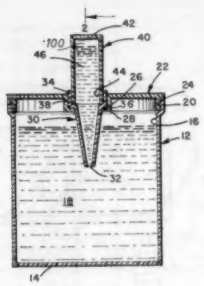
Continuation-in-part of Ser. No. 52,804, July 7, 1970, Pat. No. 3,669,074. This application Nov. 22, 1971, Ser. No. 200,954

Int. Cl. A01k *61/00*

U.S. Cl. 119—2 10 Claims

A brine shrimp hatchery comprising a first receptacle for confining brine shrimp egg-laden fluid, and a second receptacle operatively associated with the first receptacle and partially submerged in the latter for entrapping brine shrimp hatched in the first receptacle. The second receptacle is inverted and includes a chamber, defined by its upper closed end, for resisting gravitational outflow of fluid confined

therein through a lower open end which is submerged in the fluid provided in the first receptacle, thus, permitting hatched brine shrimp to pass into the inverted second receptacle from the first receptacle.

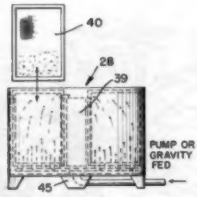


3,738,317

APPARATUS AND METHOD FOR HATCHING FISH

John D. Reynolds, 1093 Kent Road N.W., Winston-Salem, N.C.

Filed Feb. 3, 1971, Ser. No. 112,276
Int. Cl. A01k *61/00*
U.S. Cl. 119—3 1 Claim



Apparatus for and method of incubating a plurality of fish eggs wherein the apparatus includes a frame holding a plurality of selectively positioned trays each supporting a quantity of fish eggs within a circulating source of aerated spring water. The water has been subjected to ultraviolet rays by appropriate means prior to its introduction to the fish eggs for purification. The method involves uniformly circulating aerated spring water about the eggs after subjecting the water to ultraviolet rays to kill inhibiting fungus while prohibiting the introduction of air to the eggs.

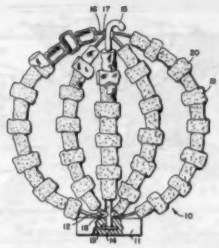
3,738,318

ARTIFICIAL CLUTCH FOR GROWING OYSTERS

David D. Woodbridge, and William R. Garrett, both of Melbourne, Fla., assignors to National Shellfish Processors, Inc., Melbourne, Fla.

Filed Mar. 20, 1972, Ser. No. 236,470
Int. Cl. A01k *61/00*
U.S. Cl. 119—4 8 Claims

An artificial clutch apparatus for growing oysters on is provided which has a concrete base for holding the clutch beneath the water in an upright position and has a center rod embedded in the concrete and extending vertically from the base and having a hook or eye for hooking to the artificial clutch for lifting it out of the water during harvesting. A plurality of elongated rods are either embedded in the concrete base or attached to the center frame member, and each having a plurality of metal cans connected thereto for growing oysters on which cans may be sprayed with gunite or concrete to provide an improved growing surface.

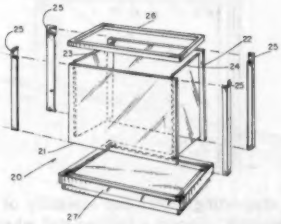


3,738,319

AQUARIUM

Albert J. Dinnerstein, Far Rockaway, N.Y., assignor to Metaframe Corporation, Maywood, N.J.

Filed Apr. 2, 1971, Ser. No. 130,599
Int. Cl. A01k *64/00*
U.S. Cl. 119—5 14 Claims



An aquarium having a rectangular array of adjoining panels includes a sealant for connecting the panels to one another such that one panel intersects an adjoining panel at a point remote from each of the opposite ends of the latter panel. Corner brace members are provided for stabilizing adjoining panels at respective corners and for covering the sealant externally of the aquarium enclosure.

3,738,320

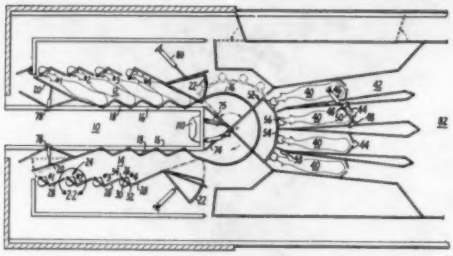
AUTOMATIC MILKING BARN

William Z. Holm, Petaluma, Calif., assignor to Ross-Holm Division, Holm Tractor & Equipment Company, Petaluma, Calif.

Division of Ser. No. 62,714, Aug. 10, 1970, Pat. No. 3,699,922, which is a continuation of Ser. No. 730,818, May 21, 1968, abandoned. This application Feb. 14, 1972, Ser. No. 226,221
Int. Cl. A01k *01/00*
U.S. Cl. 119—14.03 5 Claims

A herringbone milking parlor having automatic controls for preparation and movement of milking cows, stall adjusting

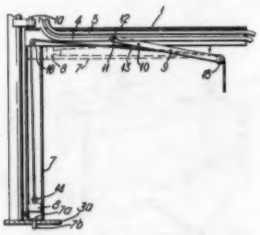
means for accommodating cows of different size in a single herring-bone stall, and a swinging sector gate for transferring a group of cows in sequence from a group of preparation stalls to a herringbone milking stall.



3,738,321
ANIMAL MILKING APPARATUS

Mervyn Lance Hicks, Taranaki, New Zealand, assignor to Turn-Styles Limited, Stratford, New Zealand

Filed Apr. 23, 1971, Ser. No. 136,783
Claims priority, application New Zealand, Apr. 24, 1970, 159950
Int. Cl. A01j *09/08*
U.S. Cl. 119—14.45 **9 Claims**



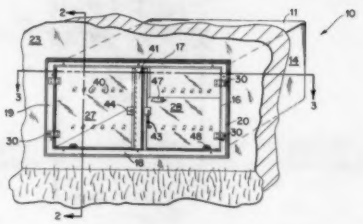
Means for supporting a teat cup assembly of milking apparatus in a position adjacent a milking stall whereby the teat cup assembly is supported above the floor of the stall and readily accessible to a milker. The support means includes a hinged arm so that the teat cup assembly may be supported at or near the outer end of such arm, and the teat cup assembly is supported in a retractible manner whereby it may immediately retract to a "home" position supported by the arm upon removal of the teat cups from a milked animal and so that the teat cup assembly cannot fall and contact the floor of the stall on removal from the animal. A vacuum supply cut-off device is associated with the retractible support means and the vacuum supply hose for the teat cup assembly to provide an arrangement whereby the vacuum supply to a teat cup assembly fitted to an animal can be cut off to permit the teat cup assembly to fall away from the animal with the result that the retractible support means immediately comes into operation to retract the teat cup assembly to the "home" and supported position without manual effort.

3,738,322
ANIMAL SHELTER

Mertie G. Smith, Route 2, Kuttawa, Ky.

Filed Apr. 5, 1971, Ser. No. 131,245
Int. Cl. A01k *1/00*
U.S. Cl. 119—15 **4 Claims**

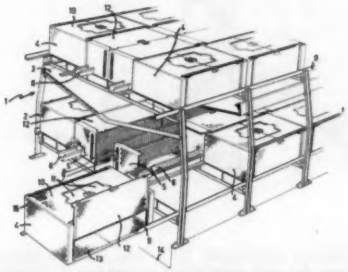
An animal shelter including an enclosed hollow body having a front end opening surrounded by a laterally, exteriorly projecting marginal flange for engagement with the front surface of a wall having an opening through which the body extends rearwardly, and a pair of doors mounted in the opening upon double-acting hinges to permit free entry and exit by an animal.



3,738,323
BATTERY FOR FATTENING BROIL CHICKENS

Jelle Boterweg, Kampen, Netherlands, assignor to Big Dutchman (Nederland) N.V., Wezep, Netherlands

Filed July 31, 1970, Ser. No. 60,080
Int. Cl. A01k *31/00*
U.S. Cl. 119—18 **14 Claims**



Cage batteries for fattening broil chickens comprising a frame having at least one layer of cages, each cage layer being provided with a feed and water supply device and a dung-collecting device together with a dung discharge device. On each cage layer, at least one longitudinal row of stationary cages has a feeding and drinking device which is arranged so that the sides of the feeding and drinking device remote from the central longitudinal plane of the row of stationary cages are accessible for feeding and drinking from adjacent cages which are removable from the frame.

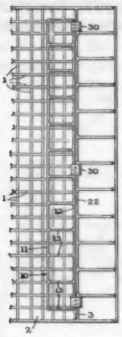
3,738,324
GRILL AND GUARD ARRANGEMENT FOR POULTRY FEED TROUGHS

Everett M. Keen, and Anthony J. Siciliano, both of Vineland, N.J., assignors to Diamond International Corporation, New York, N.Y.

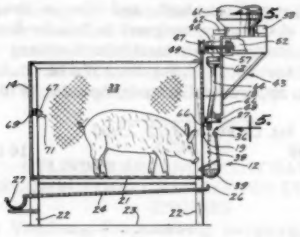
Filed Aug. 31, 1971, Ser. No. 176,614
Int. Cl. A01k *05/00*
U.S. Cl. 119—18 **7 Claims**

A grill and guard arrangement adapted to be secured over a poultry feed trough including adjustably secured grid sections one of which may be selectively positioned to effect small feed

openings over the trough to accommodate relatively young chickens and prevent their falling into the trough or to effect somewhat larger feed openings over the trough to accommodate older chickens.



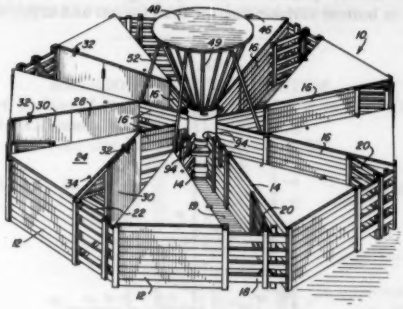
3,738,325
HUSBANDRY ACCLIMATIZING UNIT
Francis A. Wittern, Des Moines, and Warren D. Woodley, Adel, both of Iowa, assignors to Fawn Engineering Corp., Des Moines, Iowa, by said Woodley
Filed Feb. 17, 1972, Ser. No. 227,690
Int. Cl. A01k *01/02*
U.S. Cl. 119—18 **1 Claim**



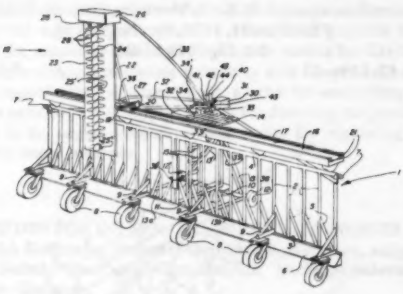
A cage for holding young farm animals after they have left the nursery and before they are let out into the field, the cage opens at the top and perforated at the bottom for collection of the excreta, with a front wall comprised partially of a feed receptacle open to the interior of the cage, and a movable carriage and feed mechanism mounted on top of the cage for reciprocal movement to disperse feed into the receptacle.

3,738,326
FEEDER PEN FOR CALVES
Oscar J. Atchley, P. O. Box 147, Evansville, Ill.
Filed May 13, 1971, Ser. No. 142,889
Int. Cl. A01k *01/00*
U.S. Cl. 119—20 **15 Claims**

An enclosure for containing animals to be fed defining a plurality of generally sector shaped confinement zones spaced circumferentially about and radiating outwardly from a central feeding station in which either a dry feeder or a liquid feeder may be positioned. Each confinement zone includes a shed type enclosure occupying only a portion of the corresponding confinement zone and each shed enclosure includes a door which may be opened to afford movement of each confined animal throughout the entire confinement zone, both inside and outside his shed. The adjacent sides of the zones are separated and defined by partitions radiating outwardly from the feeding station and the radial innermost end portions of at least two adjacent partitions may be slidably retracted generally radially outwardly of the central feeding station to allow removal of the feeder in use in a direction generally radially of the feeder station. The outermost ends of at least some sections are hinged at one end and also have a slidably mounted, hinged gate member at their other end. The feeder is mounted below an adjustable food supply means.



3,738,327
CATTLE FEEDER
Leroy D. Stirling, R.R. No. 1, Ridgetown, Ontario, Canada
Filed Feb. 11, 1972, Ser. No. 225,584
Claims priority, application Canada, Dec. 8, 1971, 129,662
Int. Cl. A01k *05/00*
U.S. Cl. 119—51 R **8 Claims**

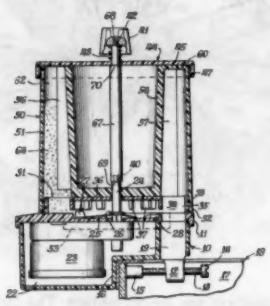


An animal feeder device, particularly suitable for use as an aid in the feeding of cattle, which incorporates a means for rearranging the feed when necessary in order to permit the animals to feed easily. The feeder comprises a frame assembly, a track disposed along the top of the frame and an auger assembly movable along the track. The auger of the auger assembly projects forwardly of the frame and is adapted to disengage feed from a feed pile situated in front of the frame, the disengaged feed falling within convenient feeding range of the animals.

3,738,328
FISH FEEDER
Steven F. Hoday, Elk Grove Village, and Jay J. Bolante, Chicago, both of Ill., assignors to Arthur I. Appleton, Northbrook, Ill.
Filed Feb. 7, 1972, Ser. No. 224,002
Int. Cl. A01k *5/02*
U.S. Cl. 119—51.13 **7 Claims**

A fish feeder has a support plate adapted to be affixed to the top of an aquarium with a portion of the support plate overhanging the aquarium. The support plate has a vertical opening in that portion. An electric motor is secured to the support plate and has its driving shaft extending vertically therefrom.

Coaxial with the shaft is an annular feed carrier having a plurality of pockets which move across the support plate opening as the carrier rotates. A connection between the shaft and the feed carrier periodically indexes the feed carrier forward to move another pocket over the opening. A removable housing has its bottom surrounding the feed carrier and supported on



the plate. The magazine has inner and outer walls connected by ribs and which define vertical hoppers open at the bottom. Feed can be put in these hoppers to fill the pockets. The magazine covers the space over the carrier at the location above the opening so that feed in the hopper cannot fall directly through a pocket above the opening and out the opening.

3,738,329

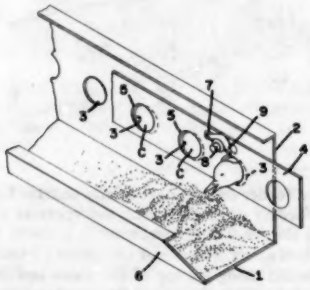
POULTRY FEEDER

Gordon Schweitzer, R.R. No. 2, Montrose, Ontario, Canada

Filed Dec. 11, 1970, Ser. No. 97,154

Int. Cl. A01k *05/00*

U.S. Cl. 119—63 8 Claims



The invention relates to a poultry feeder and, in particular, to a chick feeder. The feeder basically comprises an open-topped trough adapted to contain the feed, the trough having a bottom and at least one upstanding wall. The wall has a number of circular holes formed in it and which are spaced a predetermined amount from the bottom of the wall. The wall is also provided with a slidable member having a corresponding number of circular holes. The arrangement is such that when the holes on the slide cooperate with the holes in the wall, a number of feeding apertures for the chicks' heads are provided, the entire shape of the feeding apertures being selectively adjustable from an elliptical shape to a circular shape by movement of the slide. The shape of the feeding apertures only permits introduction of the heads of the chicks into the trough and inhibits entry of the bodies. The selective adjustability of shape of the feeding apertures also compensates for the growth of the heads of the chicks.

3,738,330

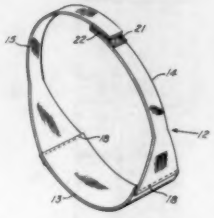
PROTECTIVE COVERING DEVICE FOR ANIMALS

Sylvia June Alofsin, 4110 West 98th Street, Overland Park, Kans.

Filed May 24, 1971, Ser. No. 146,244

Int. Cl. A01k *21/00*

U.S. Cl. 119—143 5 Claims



A belt-like protective covering device, for an animal and specifically adapted as a training covering for a male dog, includes a cover portion suited for covering a selected area of the body of the animal includes relatively narrow straps secured to the cover portion and adapted to extend around the body of the animal and arranged to releasably fasten at the free ends to form a closed loop, the closed loop being adapted to flex with body movement of the animal while the cover portion is firmly retained in place.

3,738,331

ROTARY PISTON INTERNAL COMBUSTION ENGINE WITH EXTERNALLY CONTROLLED IGNITION BY MEANS OF A SPARK PLUG

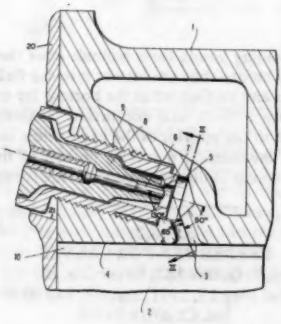
Eberhard Braun, Am Katzenbach, and Werner Brodbeck, Stuttgart, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Germany

Filed Apr. 26, 1971, Ser. No. 137,474

Claims priority, application Germany, Apr. 24, 1970, P 20 20 007.1

Int. Cl. F02b *53/12, 23/00*

U.S. Cl. 123—8.09 10 Claims



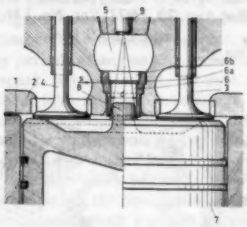
A rotary piston internal combustion engine with applied ignition by means of a spark plug within an ignition pre-chamber, especially of trochoidal construction, which essentially consists of a casing housing and of a polygonal piston rotating within the same which slides along a multi-arched inner casing running surface and over the orifice of a firing channel whereby a straight line extending in a cross-direction to the casing housing intersects both the center longitudinal axis of the spark plug as also the center longitudinal axis of the firing channel in the ignition pre-chamber in front of the center electrode of the spark plug.

3,738,332

COMPRESSION-IGNITION ENGINE

Pierre Eyzat, Vanves; Andre Ecomard, Le Peco; Claude Stephant, Boulogne, and Jean-Claude Ghersi, Suresnes, all of France, assignors to Institut Francais Du Petrole Des Carburants Et Lubrifiants, Rueil-Malmaison, France

Filed Apr. 8, 1971, Ser. No. 132,381
Claims priority, application France, Apr. 15, 1970, 7013719
Int. Cl. F02b 3/00
U.S. Cl. 123—32 R 4 Claims



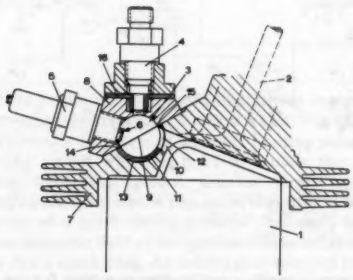
Compression ignition engine comprising a prechamber communicating with the cylinder through a transfer passageway whose smallest diameter is 0.6 $D^{3/4}$, D being the cylinder bore diameter expressed in millimeters, a piston provided with a protrusion adapted to penetrate said transfer passageway so as to leave an annular clearance therebetween which is at most 0.05 $D^{3/4}$, with D expressed in millimeters, when the piston is at the upper dead center, said protrusion being such as to leave a free passage for the gases between the protrusion and the lower edge of the transfer passageway , which passage , during the downward stroke of the piston becomes equal to the minimum section with which the transfer passageway opens into the precombustion chamber, when the crankshaft has rotated from the piston top dead center position through an angle expressed in degrees of crankshaft rotation corresponding to between one half the duration of injection at full load and the whole of said duration.

3,738,333

CYLINDER ARRANGEMENT HAVING A PRECOMBUSTION CHAMBER FOR COMBUSTION ENGINES

Gustav Vogelsang, Braunschweig, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed July 9, 1971, Ser. No. 161,013
Claims priority, application Germany, July 17, 1970, P 20 35 464.7
Int. Cl. F02b 23/00
U.S. Cl. 123—32 SP 3 Claims



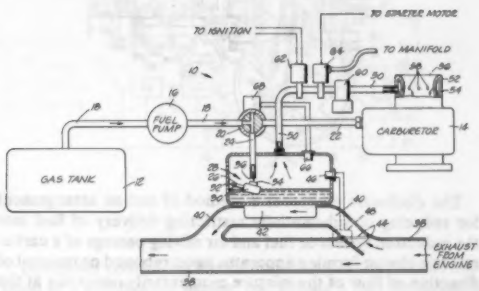
In a combustion engine having external ignition, a cylinder arrangement comprising a combustion chamber and a precombustion chamber in communication therewith, a fuel injection valve and a spark plug means communicating with the precombustion chamber and lying at a predetermined angle with respect to each other, means lining the precombustion chamber to a predetermined separating point or level in said precombustion chamber and particularly lining the wall portion of the precombustion chamber which lies across the injection valve, the lining means comprising a heat resistant material having a very low heat conducting capability.

3,738,334

EMISSION REDUCTION SYSTEM

Richard S. Farr, Los Angeles, Calif., assignor to Farr Company, El Segundo, Calif.

Filed Dec. 16, 1971, Ser. No. 208,851
Int. Cl. F02m 31/18
U.S. Cl. 123—34 A 11 Claims



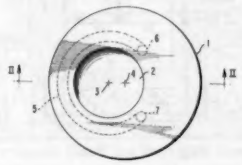
An emission reduction system for use with a conventional internal combustion engine which includes a pressure vessel, means for supplying the pressure vessel with gasoline fuel, means for actuating said supplying means, means for directing the engine exhaust into close proximity with the pressure vessel to vaporize the gasoline therein, a valve for controlling the engine exhaust, a fuel supply conduit for directing the gasoline vapor to the engine carburetor and means for regulating the gasoline vapor pressure.

3,738,335

PISTON FOR INTERNAL COMBUSTION ENGINES

Heinrich Hoffmann, Stuttgart-Geroksruhe, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-unterturkheim, Germany

Filed Nov. 26, 1971, Ser. No. 202,530
Claims priority, application Germany, Nov. 27, 1970, P 20 58 410.5
Int. Cl. F01p 3/10
U.S. Cl. 123—41.35 2 Claims



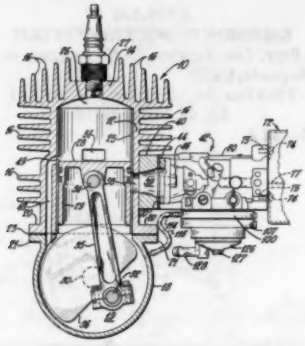
A piston for an internal combustion engine with a ring-shaped cooling space arranged in the piston top which is connected with a feed bore and with a discharge bore for the cooling medium; in particular, the piston has an eccentrically arranged combustion space recess about which the cooling space is laid as an open-ring whose ends are connected with the feed bore and the discharge bore, respectively.

3,738,336

METHOD AND ARRANGEMENT FOR CONTROLLING FUEL DELIVERY IN A CHARGE FORMING APPARATUS

Norman F. Holland, 4407 Elmhurst Road, Toledo, Ohio

Filed Apr. 19, 1971, Ser. No. 135,145
Int. Cl. F02b 33/04; F02m 7/00
U.S. Cl. 123—73 R 38 Claims



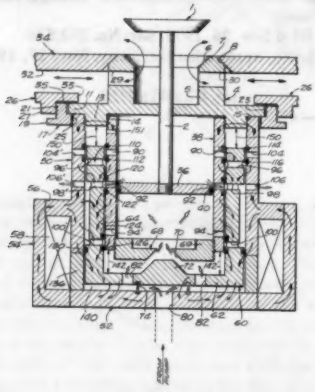
The disclosure embraces a method of and an arrangement for reducing or substantially restricting delivery of fuel into the induction system or fuel and air mixing passage of a carburetor or charge forming apparatus upon rebound or reversal of direction of flow of the mixture momentarily occurring at the periods of the closing of the mixture inlet port or ports of an internal combustion engine by reducing mixture rebound velocity and increasing the pressure adjacent the zone of delivery of fuel into the mixing passage thereby preventing appreciable enrichment of the fuel and air mixture during said rebound periods.

3,738,337

ELECTRICALLY OPERATED HYDRAULIC VALVE PARTICULARLY ADAPTED FOR POLLUTION-FREE ELECTRONICALLY CONTROLLED INTERNAL COMBUSTION ENGINE

Philip E. Massie, 4220 Irving Place, Culver City, Calif.

Filed Dec. 30, 1971, Ser. No. 213,881
Int. Cl. F01l 9/02, 9/04
U.S. Cl. 123—90.12 16 Claims



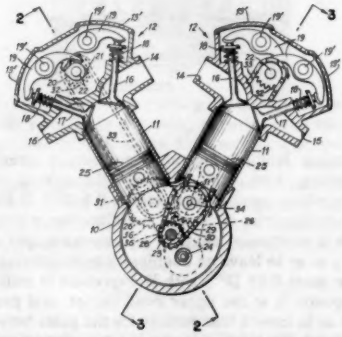
An electrically operated hydraulically driven valve driven by internal combustion engine lubricating oil. A ported valve sleeve is positioned between inner and outer cylinders, the inner of which is the hydraulic valve operating cylinder. All concentric members have radial ports. The electrically operated sleeve member controls the porting controlling the inflow and outflow of hydraulic liquid. The control sleeve is moved electromagnetically by way of electromagnetic windings combined with a permanent magnet adapting the operation to pulse type of digital control adapting the valve to electronic digital control from multiple variable inputs.

3,738,338

INTERNAL COMBUSTION ENGINES

Vernon C. Wickman, 3128 W. Juneau Avenue, Milwaukee, Wis., assignor to AMF Incorporated, White Plains, N.Y.

Filed Apr. 23, 1971, Ser. No. 136,872
Int. Cl. F02l 1/00
U.S. Cl. 123—90.27 1 Claim



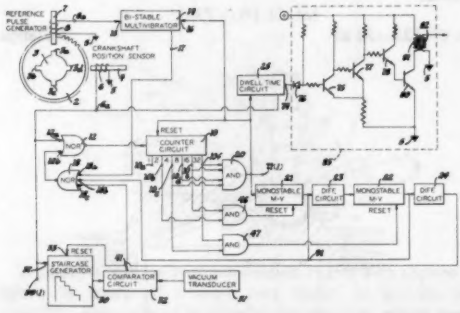
In a twin V-cylinder motorcycle engine the two cylinders and their overhead subassemblies are duplicates of each other and shifted 180° with respect to each other. Their overhead camshafts are driven off opposite ends of the crankshaft by speed reduction drive means disposed along opposite sides of the engine.

3,738,339

ELECTRONIC IGNITION SPARK ADVANCE SYSTEM

Gerald O. Huntzinger, Anderson; Leonard J. Sheldrake, Noblesville, and Byron W. Johnson, Anderson, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 6, 1971, Ser. No. 205,186
Int. Cl. F02p 5/04, 1/00
U.S. Cl. 123—117 R 5 Claims



An electronic ignition spark advance system for use with internal combustion engine transistor ignition systems having an ignition coil primary winding switching transistor. A reference pulse, produced a selected number of degrees before the top dead center position of each engine piston, enables an ignition spark advance gate to gate a series of crankshaft position pulses, each indicating one degree of crankshaft rotation, to a

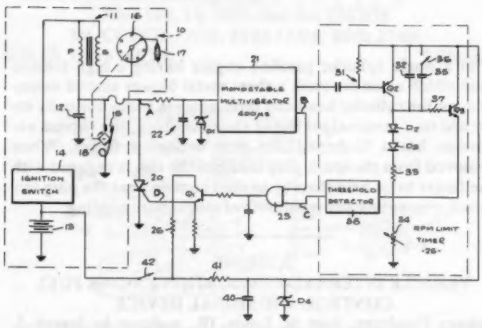
counter circuit. When the counter circuit has counted the number of crankshaft position pulses equal to the number of selected degrees before top dead center the reference pulses are produced, an ignition signal is produced which extinguishes the ignition coil primary winding switching transistor and operates circuitry which produces a signal which may disenable the ignition spark advance gate. To provide speed ignition spark advance, however, delay circuitry responsive to each ignition signal provides two consecutive delay periods during which the disenabling of the ignition spark advance gate is delayed. Consequently, the counter circuit continues to count crankshaft position pulses during the delay periods, thereby providing a speed ignition spark advance in degrees equal to the number of crankshaft position pulses counted during the delay periods at any engine speed. To provide two speed ignition spark advance limits, the first delay period is terminated with a first selected crankshaft position pulse count if it occurs before the end thereof and the second delay period is terminated with a second greater selected crankshaft position pulse count if it occurs before the end thereof. To provide vacuum ignition spark advance, a vacuum spark advance signal is provided at the conclusion of the delay periods for the number of crankshaft position pulses equal to the degrees of vacuum ignition spark advance required which enables the ignition spark advance gate to gate the crankshaft position pulses to the counter circuit after the delay periods.

3,738,340

INTERNAL COMBUSTION ENGINE LIMITER

John M. Olson, Oxnard, Calif., assignor to Ikon Engineering, Inc., Oxnard, Calif.

Filed Jan. 10, 1972, Ser. No. 216,695
Int. Cl. F02p 9/00; F02d 11/00
U.S. Cl. 123—118 **7 Claims**



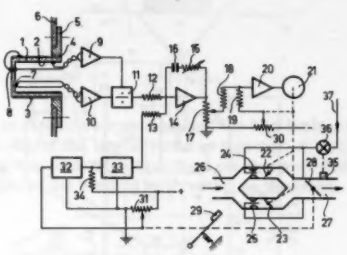
An RPM limiter for an internal combustion engine employs a silicon-controlled rectifier (SCR) as a switch to shunt the ignition system in response to an RPM limiting pulse from an RC timing circuit which is reset to initiate the pulse immediately upon the ignition breaker points opening. A monostable multivibrator is also set at that time to initiate the generation of a spark timing pulse of sufficient duration to allow the magnetic field of the ignition coil to break down, and thereby fire a spark plug. An inhibit gate receives both pulses and allows the SCR to be fired during the period of the RPM limiting pulse after the period of the spark timing pulse. A switch connects a second capacitor in parallel with the capacitor of the RC timing circuit to permit a potentiometer of the timing circuit to be set and tested for the desired RPM limit while operating the engine at only half of that limit when the two capacitors are of equal size.

3,738,341

DEVICE FOR CONTROLLING THE AIR-FUEL RATIO λ IN A COMBUSTION ENGINE

Cornelis Henricus Loos, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 19,438, March 13, 1970, abandoned.
This application May 1, 1972, Ser. No. 248,928
Claims priority, application Netherlands, Mar. 22, 1969, 6904455
Int. Cl. F02m 7/00, 13/04; G01n 31/00, 27/42
U.S. Cl. 123—119 R **8 Claims**



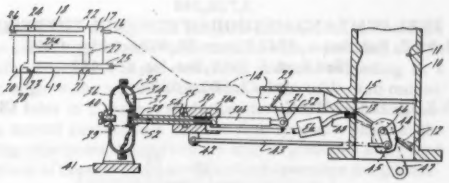
Device for controlling the air-fuel ratio λ of the mixture supplied to a combustion engine, comprising a pick-up sensitive to the carbon monoxide content of a gas mixture and arranged in an exhaust gas duct of the engine and producing a voltage increasing with said content, a member for controlling the air-fuel ratio λ and a feedback mechanism acting upon said member so that the ratio λ is increased when the voltage produced by the pick-up increases.

3,738,342

ENGINE EXHAUST RECIRCULATION

John Janusz Lewakowski, 3346 Winterfield, Warren, Mich.

Filed Dec. 27, 1971, Ser. No. 212,584
Int. Cl. F02m 25/00
U.S. Cl. 123—119 A **10 Claims**



Automobile exhaust gases are recycled through the engine via a bypass duct connecting a cool portion of the exhaust system with the fuel-air inlet induction conduit. A servo valve is controlled by the pressure at a vacuum sensing port opening into the inlet induction conduit at the leading edge of a blade type throttle valve when the latter is at its idle position, so as to operate in response to throttle position and in turn control a recycling valve in the bypass duct to effect controlled exhaust recycling in increasing amounts as the throttle valve opens from its idle to part load positions, and to reduce the exhaust recycling at both idle and wide open throttle positions.

3,738,343

FUEL PRESSURE REGULATING SYSTEM FOR INTERNAL COMBUSTION ENGINES

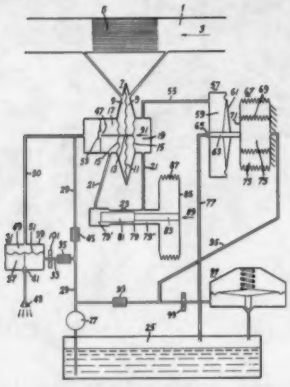
Johannes Zeyns, Krauler Elbdeich, Pappelhof, D-2 Hamburg-Kirchwerder 4, and Heinz Enneking, Hegholt 32, D-2 Hamburg 71, both of Germany

Filed Mar. 4, 1971, Ser. No. 121,037

Claims priority, application Germany, June 3, 1970, P 20 10 769.1

Int. Cl. F02b *33/00*

U.S. Cl. 123—119 R 7 Claims



The invention pertains to the method for operating an internal combustion engine wherein a predetermined air-fuel mixture is maintained under all conditions of temperature and pressure. A resistance member is placed in the combustion air intake and the air pressure on each side of the resistance member is measured and sensed within a differential pressure control. The differential pressure control, by means of valves regulating the fuel pressure, causes a fluctuation in the fuel pressure dependent upon the air pressure upon opposite sides of the combustion air resistance. In addition to the fuel pressure being regulated by pressure differences occurring on opposite sides of the combustion air resistance, the fuel pressure is also regulated by means of ambient air pressure and temperature sensing valves and resistances whereby the predetermined air and fuel mixture may be maintained under all operating conditions.

3,738,344

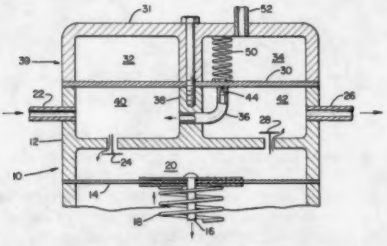
FUEL PUMP AND METHOD OF CONTROL THEREFOR

John C. Bandimere, 3740 Fenton St., Wheatridge, Colo.

Filed Sept. 5, 1969, Ser. No. 855,652

Int. Cl. F02m *69/00*

U.S. Cl. 123—139 AF 1 Claim



An engine fuel pump of the type having a pulsating diaphragm operated in one direction by an engine driven member, such as an oscillating arm driven by an eccentric on the engine cam shaft, and operated in the other direction by a spring which establishes output or pumping pressure to the needle valve of a float-type carburetor, the pump having inlet and outlet valves which operate upon demand of fuel to the carburetor and permits the diaphragm to pulsate accordingly, characterized by a by-pass valve controlled by intake manifold pressure which by-passes a metered flow of fuel from a pumping chamber to the inlet side of the inlet valve to thereby reduce pumping pressure at normal automotive speeds at which pumping pressure is in excess of that required and which results in an abnormally high fuel level in the carburetor, causing excessive consumption of fuel or flooding of the carburetor, the by-pass becoming inoperative at higher than normal speeds to permit the pumping pressure to increase to its normal designed value at such higher speeds and at which the pumping pressure will not cause the malfunctions referred to which occur at the normal automotive speeds.

3,738,345

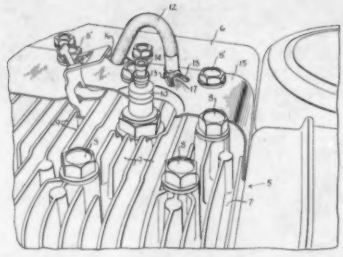
SAFETY DEVICE FOR SMALL GASOLINE ENGINES

Herbert A. Gumtow, Brookfield, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed May 15, 1972, Ser. No. 253,156

Int. Cl. F02p *11/00*, *13/00*; F02b *77/08*

U.S. Cl. 123—169 R 2 Claims



In a single cylinder gasoline engine having a high tension lead which extends across a sheet metal blower shroud extension on the cylinder head and terminates in a clip normally attached to a terminal on top of the spark plug, the shroud extension has a U-shaped slot that defines a finger. When removed from the spark plug terminal the clip is engaged with the finger to be held thereby against coming near the plug terminal, preventing any possibility of inadvertent starting.

3,738,346

VEHICLE INTERNAL-COMBUSTION ENGINE FUEL CONTROL AND SIGNAL DEVICE

Johnny Goodman, East St. Louis, Ill., assignor to Joseph J. Bristow, East Carondelet, Ill.

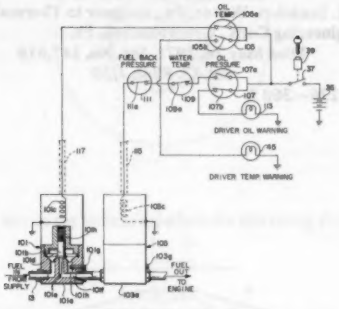
Continuation-in-part of Ser. No. 109,392, Jan. 25, 1971, Pat. No. 3,646,513. This application Jan. 26, 1972, Ser. No. 220,800

Int. Cl. F01m *1/24*; B60q *1/00*; F02d *35/00*

U.S. Cl. 123—198 DB 13 Claims

A control for preventing damage to an internal-combustion engine from extended operation under excessive operating conditions where the engine power varies according to the flow of fuel to the engine (e.g., as in a diesel engine). The control includes a pair of fuel-limiting solenoid valves each having a plunger movable between a nonrestrictive position and a second position restricting the fuel flow to the engine. The windings of the valves, when energized, maintain the respective plungers in the nonrestrictive positions. The plunger of a first one of the valves, when in the second position, restricts the fuel flow by a presetmount causing reduction in engine power sufficient to reduce its operating temperature but permitting continued normal operation at the reduced power. The other plunger when in the second position, restricts the

fuel flow by a greater preset amount reducing engine power sufficiently to prevent continued normal operation. First switch means is connected with the first valve winding for controlling its energization and is responsive to an engine operating condition i.e., lubricant temperature) operting to deenergize the winding if the condition (e.g., low lubricant pressure) warrante engine power reduction. Second switch means is



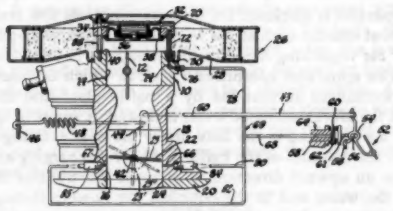
connected with the winding of the second valve and similarly controls its energization, being responsive to another operating condition(e.g., lubricant pressure) for causing deenergization of the latter winding if discontinuing the normal operation of the engine is warranted by the operating condition (e.g., lubricant pressure too low). The control is especially useful with diesel truck engines.

3,738,347

THROTTLE PEDAL CONTROLLED PNEUMATICALLY OPERATED THROTTLE OVERRIDE

Donald D. Stoltman, Henrietta, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 14, 1972, Ser. No. 226,075
Int. Cl. F02b 77/08; F02d 11/08; B60k 27/08
U.S. Cl. 123—198 DB **7 Claims**



A pneumatically operated valve is mounted on the air horn of a carburetor and is operable in a normal condition to fully open a carburetor air inlet and in an alternative throttle override condition to limit the air flowing through the inlet and thereby throttle the engine down to an idling speed. A control valve is operated by the vehicle throttle pedal to control the communication of engine vacuum to the pneumatically operated air inlet valve to normally establish the normal condition when the throttle pedal is depressed and the alternative override condition when the throttle pedal is released.

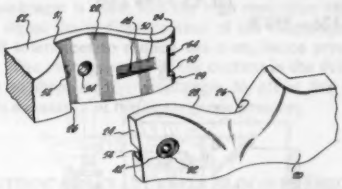
3,738,348

TAKE-DOWN ARCHERY BOW

Richard S. Karbo, Whittier, Calif., assignor to Brunswick Corporation, Chicago, Ill.

Filed Feb. 11, 9171, Ser. No. 114,567
Int. Cl. F41b 5/00
U.S. Cl. 124—24 **4 Claims**

A take-down archery bow having a pair of bow limbs with stepped interior ends which are adapted to be locked in the mated position by a threaded bolt. The lateral surfaces between the steps has an interengaging ramp and incline combination which interacts to apply a longitudinal force on the



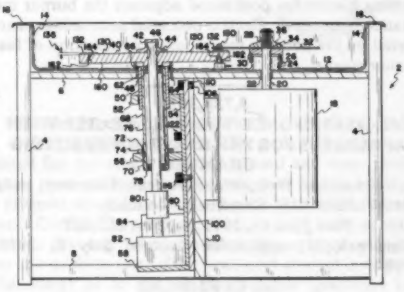
bow limbs to draw the stepped ends of the bow limbs together as the bolt draws the lateral surfaces together. A pair of interengaging boss and cut-out portions are also provided to absorb a portion of the bending loads acting on the limbs.

3,738,349

CUTTING TABLE FOR ROCK

Laurence C. Cooper, 365 S. 300 W., and E. Blair Maxfield, 456 S. 300 W., both of Cedar City, Utah

Filed Aug. 3, 1971, Ser. No. 168,661
Int. Cl. B28d 1/04
U.S. Cl. 125—13 R **6 Claims**



A device for slicing rock samples mounted on microscope slides including a sample table formed with a plurality of flat, radially disposed sample mounting surfaces extending at a slight angle with respect to the plane of the table, and mounting the table in a manner such that the sample mounting surfaces extend parallel to a circular disk-type saw blade at the leading edge point thereof and are moved gradually away from the plane of the saw blade as the cutting operation progresses.

3,738,350

FIBROUS CATALYST STRUCTURES FOR OVEN WALLS

Alvin B. Stiles, 1301 Grayson Road, Welshire, Wilmington, Del.

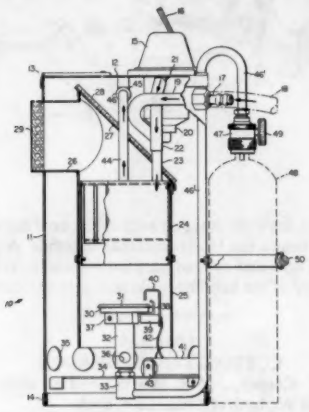
Division of Ser. No. 46,550, June 15, 1970, which is a continuation-in-part of Ser. No. 803,560, March 3, 1969, abandoned. This application May 12, 1972, Ser. No. 252,769
Int. Cl. A21b 1/00
U.S. Cl. 126—19 R **5 Claims**

This invention relates to paper-like catalytic structures which are applied to oven walls to render them self-cleaning. These structures are comprised of a catalytic material uniformly distributed throughout a porous fibrous support material.

3,738,351
PORTABLE WATER HEATER

James E. Watts, Bountiful, Utah, assignor to Litton System Inc., Beverly Hills, Calif.

Filed Aug. 2, 1971, Ser. No. 167,895
Int. Cl. F24h *1/06*
U.S. Cl. 126—350 R 5 Claims

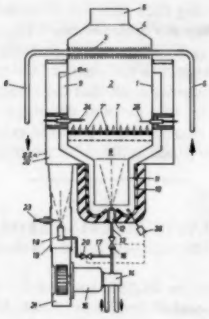


A portable water heater comprising a housing supporting a pump and heat exchanger in fluid communication between an inlet and an outlet conduit. Burner means, positioned to supply heat to the heat exchanger, is connected to a control valve which is connectable to a supply of fuel. Igniter means, comprising electrodes positioned adjacent the burner means and manually operable electric potential generating means, is supported by the housing for initiating combustion of fuel by the burner means.

3,738,352
OIL-HEATED ONCE-THROUGH HEATER WITH APPARATUS FOR PRE-HEATING THE MIXING CHAMBER

Horst Reichmann, Wuppertal-Elberfeld, Germany, assignor to Joh Vaillant KG., Remscheid, Germany

Filed June 16, 1971, Ser. No. 153,587
Claims priority, application Austria, July 6, 1970, A 6062/70
Int. Cl. F24h *1/12*
U.S. Cl. 126—351 3 Claims

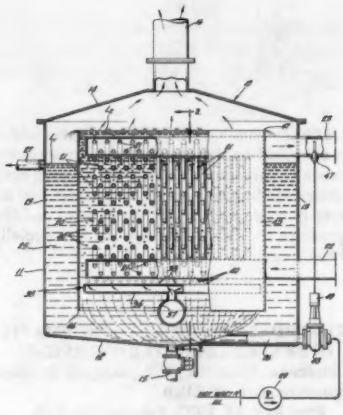


An oil gasification burner comprises a mixing chamber into which oil is sprayed to be vaporized by the chamber heat to produce a combustible gas. This gas, along with air moves downstream from the chamber through a plate and is burned on the downstream side of the plate to heat the heat exchanger of a once-through water heater. A blower communicates with the chamber through a conduit for introducing air for combustion into the chamber. An auxiliary oil burner in the conduit is operated during start-up to supply heat for heating the chamber so that it will be prepared to gasify the oil subsequently sprayed into the chamber.

3,738,353
VAPORIZING APPARATUS

Joseph J. Santoleri, Wayne, Pa., assignor to Thermal Research & Engineering Corp., Conshohocken, Pa.

Filed May 26, 1971, Ser. No. 147,019
Int. Cl. F24h *1/20*
U.S. Cl. 126—360 A 5 Claims



Apparatus is disclosed for utilizing relatively low temperature heat sources such as the waste heat of thermally-polluted water for vaporizing liquid mediums such as liquefied natural gas. The apparatus comprises a tank in which is mounted a heat exchanger surrounded by a baffle plate and through which the aforementioned water is flowed. A series of sparger pipes are mounted in the tank below the heat exchanger and within the confines of the baffle plate for discharging air bubbles in an upward direction to increase the transfer of heat from the water and to the liquefied gas flowing through the heat exchanger. Means is provided to sense the temperature of the vapor leaving the heat exchanger for actuating control means associated with a valve which is connected to an inlet pipe of the tank and which is operated to increase the flow of water through the tank in response to a decrease in the temperature of the exiting vapor and to decrease the flow of water through the tank in response to an increase in the temperature of the exiting vapor.

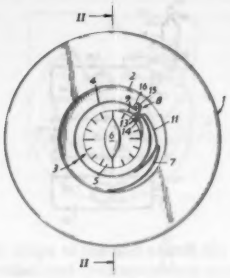
3,738,354
TIMER DEVICES FOR CULINARY PURPOSES

Graham John Aries, Stourbridge; Brian Scott-Smith, High Wycombe, and David Malcolm, Maidenhead, all of England, assignors to Tower Housewares Limited, Staffordshire, England

Filed Oct. 18, 1971, Ser. No. 189,985
Int. Cl. A47j *27/00*
U.S. Cl. 126—388 13 Claims

A culinary timer device comprising a timer mechanism of adjustable operating period incorporated in a cooking vessel or in the cover of such a vessel, a thermo-sensitive device ar-

ranged to initiate operation of the timer mechanism when the temperature of the vessel contents reaches a predetermined

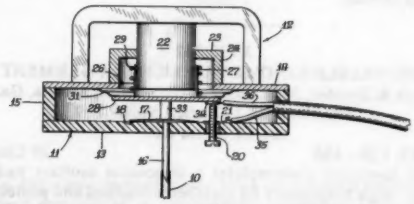


value, and means for indicating when the operating period has ended.

3,738,355
BONE GAGE
Joseph E. Salvatore, 200 Engle St., Englewood, N.J.
Filed Aug. 5, 1971, Ser. No. 169,301
Int. Cl. A61b *5/10*
U.S. Cl. 128—2 S **13 Claims**

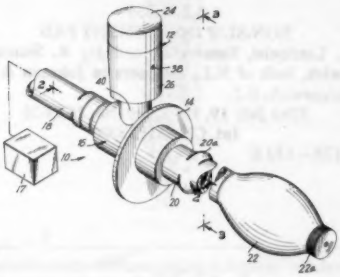
A bone gage for measuring the thickness or diameter of a bone. The bone gage comprises a body having mounted thereon extended wire hooks formed with jaws which are adapted to be extended through a hole formed in the bone structure, and which spring between open and closed position to engage and disengage the distal edge of the bone to be gaged. A measuring sleeve is operatively associated with the body so as to be freely slidable relative to the body, toward and away from the bone to be measured, when the jaws are biased opened and which is frictionally secured or locked to the body when the jaws are biased to a closed position. A scale is operatively associated with the measuring sleeve to measure the distance or displacement between the jaws and the adjacent end of the sleeve to determine the bone diameter disposed therebetween.

3,738,356
INTRAVENOUS PRESSURE MONITOR
Harold W. Workman, Jackson, N.J., assignor to Iowa State University Research Foundation, Inc., Ames, Iowa
Continuation-in-part of Ser. No. 703,061, Feb. 5, 1968, abandoned. This application Jan. 22, 1971, Ser. No. 108,756
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 D **4 Claims**



An air-filled catheter transmits an intravenous blood pressure to a pressure-sensing transducer having a coil connected to a flexible membrane or diaphragm which defines one side of the catheter chamber. A digital feedback signal is generated in response to displacement of the membrane; and this feedback signal is used to energize the coil and drive the membrane back to its original position. A highly sensitive (i.e. compliant) diaphragm is used; and the high repetition rate of the feedback signal limits displacement of the diaphragm within very small tolerances to reduce the compliance error of the diaphram. The average value of the current in the driving coil necessary to displace the diaphragm to offset the catheter pressure is a measure of the intravenous pressure.

3,738,357
CONTROL APPARATUS FOR BLOOD PRESSURE TESTING DEVICE
Roger Hayes, 260 Garth Road, Scarsdale, N.Y.
Filed Oct. 26, 1971, Ser. No. 192,193
Int. Cl. A61b *5/02*; F16k *51/00*
U.S. Cl. 128—2.05 G **22 Claims**

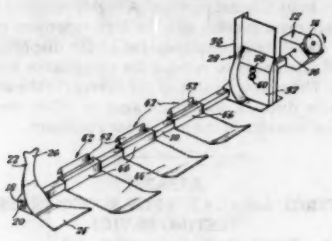


A valve arrangement for accurately controlling the bleed rate of a sphygmomanometer. The valve includes a head mounted for movement between closed and open positions, with the open position being established by the setting of a cam element which is contacted by the head when the valve is opened. Contact between the head and the cam permits the air under pressure to escape from the sphygmomanometer either at a uniform rate (if the head-cam contact is maintained continuously) or in discrete controllable quantities (if the head is periodically brought into contact with the cam). The cam position is pre-settable to establish a range of release rates. The valve arrangement also incorporates an improved inverted conical release valve and seat.

3,738,358
SPLINT
Stanley Augustus Hallett, Hemyock Place, Wellington, Somerset, England
Filed May 10, 1971, Ser. No. 141,508
Claims priority, application Great Britain, May 15, 1970, 23,540/70
Int. Cl. A61f *5/04*
U.S. Cl. 128—85 **8 Claims**

A splint for immobilizing and supporting a fractured limb has a rigid elongate frame member for arranging alongside the limb. A movable member is slidably mounted to the frame member for securing to the limb below the fracture, and a pressure member is mounted to the frame member for engaging the patient's body above the fracture. Traction means is provided for applying controlled movement to the movable member away from the fracture. Additional support members

may be slidably mounted to the frame member between the pressure member and movable member. All the limb engaging members are symmetrically designed so that they can be

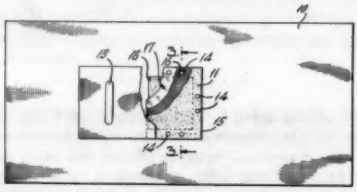


mounted in either of two ways to the frame member for use with a right-hand limb or a left-hand limb respectively. The limb engaging parts are made from non-metallic material so that the limb can be X-rayed with the splint in position.

3,738,359
NON-SLIP INSTRUMENT PAD

Julius A. Lindquist, Somerville, and Jay R. Sommers, East Brunswick, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed July 19, 1971, Ser. No. 163,636
Int. Cl. A61f *13/00*
U.S. Cl. 128—132 D 11 Claims



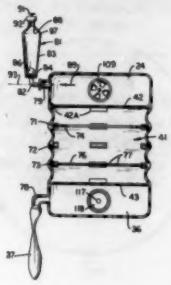
A non-slip instrument pad is disclosed, which is composed of a synthetic polymer foam material applied to a substrate. The foam material is highly absorbent, has a high coefficient of friction and a low surface resistivity. The polymers used in making the foam are either styrene butadiene polymers or carboxylated styrene butadiene polymers. The foamed polymer contains an anti-static agent.

3,738,360
UNITARY DISPOSABLE CIRCLE ABSORPTION CANISTER ASSEMBLY

Gale E. Dryden, 5835 North Tacoma Avenue, Indianapolis, Ind.

Continuation-in-part of Ser. No. 684,005, Nov. 17, 1967, abandoned, and a continuation of Ser. No. 775,761, Nov. 14, 1968, abandoned. This application Apr. 7, 1971, Ser. No. 132,082
Int. Cl. A61m *17/00*
U.S. Cl. 128—188 2 Claims

A circle absorption system for anesthesia, including a gas machine, a carbon dioxide absorbing canister assembly with corrugated inner wall surface, a gas supply hose thereto, rebreathing hoses and a mask connected thereto, a manometer and pressure relief valve connected thereto, an absorbing medium therein, and one-way valves mounted therein, the canister assembly with absorbing medium and valves being disposable. A venting device, various partition mounts, and

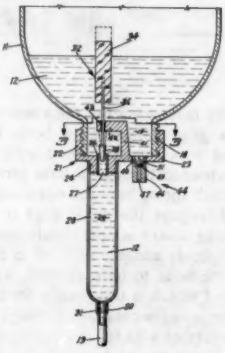


accessory connection fittings are arranged for versatility and convenience in use.

3,738,361
CONTROL DEVICE FOR PARENTERAL LIQUID FEED APPARATUS

Maynard L. Price, 810 7th Street, Sturgis, S. Dak.

Filed Sept. 20, 1971, Ser. No. 181,749
Int. Cl. A61m *5/00*
U.S. Cl. 128—214 E 10 Claims



A fluid flow control device for an administration set used to introduce parenteral liquids into a patient. The control device has a body releasably attached to a container storing the liquid and connected to a feeding tube for carrying the liquid to a hypodermic needle. A cone-shaped valve connected to a float controls the rate of flow of liquid through a passageway in the body. The valve and float are movably mounted on the body. When the level of liquid in the container is lowered to or reaches a point where the container is substantially empty, an amount of liquid is retained in the container so that limited flow of liquid through the passageway is continued for a period of time.

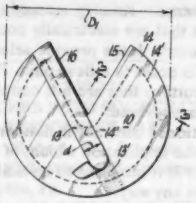
3,738,362
DISPOSABLE SANITARY LINER FOR A GARMENT

Vincent R. Sneider, 3422 Hallcrest Drive, N.E., Atlanta, Ga.

Filed Nov. 13, 1970, Ser. No. 89,239
Int. Cl. A61m *1/06*
U.S. Cl. 128—280 20 Claims

The invention contemplates a disposable sanitary pad in which a high absorbency fill member is retained and protected by a thin absorbent cover, both being attached to a thin flexible impermeable back member having a thickness in the order of one or a few mils. This back member, on its opposite side, is

provided with a non-toxic adhesive surface which, in its shipping and stored condition, is protected by a pull-away cover. The non-toxic adhesive, in its exposed or uncovered



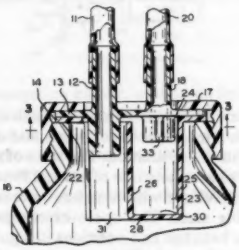
condition, and the shape of the pad enable the sanitary pad to be removably attached and conformed to a concave portion of a garment such as a brassiere pocket or cup.

3,738,363

BREAST PUMP

Francis J. Lunas, Sitka, Alaska; Edward E. Burroughs, Portland, and Franklin G. Smith, Portland, both of Oreg., assignors to Frances J. Lunas, Sitka, Alaska by said Burroughs and said Smith

Filed Jan. 17, 1972, Ser. No. 218,208
Int. Cl. A61m *1/06*
U.S. Cl. 128—281 4 Claims



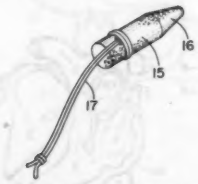
A breast pump adapted for installation in a standard nursing bottle includes a saliva trap and a combined gasket and suction tube receiving means which nest in the bottle mouth being retained therein by the annular cap when the same is threadedly engaged with the exterior of the bottle.

3,738,364

COMPRESSED TAMPON WITH TAPERED TIP

Huron C. Brien, Raymond A. Morman, and Leonard M. Kaczmarzyk, all of Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 1, 1970, Ser. No. 77,119
Int. Cl. A61f *13/20*
U.S. Cl. 128—285 1 Claim



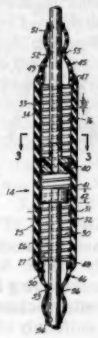
An absorbent tampon made from an elongate rectangular pledget compressed to substantially cylindrical form with a tapered generally conical forward end, in which the conical tip has been formed in a manner to provide it with only a slightly lower density than the major cylindrical portion of the tampon, and to provide a section of the tampon taken at the base of said conical tip which is of slightly higher density than said major cylindrical portion. The method for making such a tampon is also disclosed. In this method the improved conical tip is formed without removing or cutting out material from the forward end of the starting pledget or the resulting tampon.

3,738,365

SPRING REINFORCED EXTENSIBLE CATHETER

Rudolf R. Schulte, 600 Pine Avenue, Goleta, Calif.

Continuation-in-part of Ser. No. 843,517, July 22, 1969, Pat. No. 3,623,484. This application Nov. 1, 1971, Ser. No. 194,308
Int. Cl. A61m *27/00*
U.S. Cl. 128—350 R 10 Claims



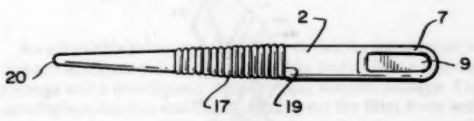
An extensible catheter comprising a flexible tubular housing with a circularly cylindrical passage extending therethrough. A flexible metallic helical spring having a plurality of identical turns fits in the passage in abutment with the wall. The innermost boundary of the turns forms an axial guideway for guiding a pair of heads, each disposed on a conduit section which projects beyond the tube. A retainer member makes a fluid-sealing structural fit at each end of the housing, holds the heads in the passage, and makes a sliding fluid-sealing fit with the outer wall of the respective conduit section. The relative axial lengths of the passage and of the heads are such as to permit the axial spacing apart of the heads and therefore the total length of the catheter to be varied.

3,738,366

DISPOSABLE FORCEPS

Theodore G. Blomberg, 3715 West 9th St., Winthrop Harbor, Ill.

Filed July 15, 1970, Ser. No. 55,190
Int. Cl. A61b *17/50*
U.S. Cl. 128—354 5 Claims



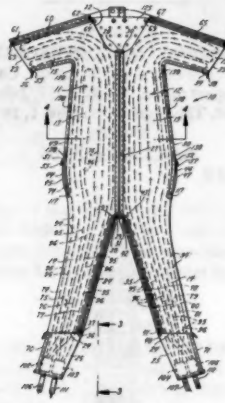
A disposable forceps constructed of a light gauge material such as metal to provide an economical instrument for use in various medical and related applications. The transverse configuration of the body of the forcep is formed with a U-shaped shape to achieve high ridigity in the instrument with the light gauge material.

3,738,367

PATIENT GARMENT WITH TEMPERATURE CONTROL

John C. Hardy, Weatogue, Conn., assignor to Angelica Corporation, St. Louis, Mo.

Filed Feb. 11, 1971, Ser. No. 114,607
Int. Cl. A61f 7/00
U.S. Cl. 128—379 8 Claims



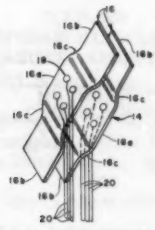
A hospital patient garment of lateral stretch fabric for conforming to different body shapes. Small-diameter tubes attached to the garment for conveying heating or cooling fluids circulated by a hyperthermia machine. The tubes lie longitudinally of the garment to uniformly blanket the entire surface area of the garment while permitting lateral expansion of the fabric when the garment is worn by relatively obese persons. Strategically located zippers for easy donning and doffing of the garment and for providing selective access to different areas of the body, such as for operations. Special adjustment straps spaced along the torso zippers for holding the garment in place on the body of an exceptionally obese person with the torso zippers unzipped. A resilient pad snaps to the back of the garment for improving comfort by yielding to the impressions of the fluid conveying tubes. Flaps at the back of the garment can be releasably held folded away from the lower torso area with the leg zippers partially unzipped to free the garment from interference with the use of a bed pan.

3,738,368

IMPLANTABLE ELECTRODES FOR THE STIMULATION OF THE SCIATIC NERVE

Roger E. Avery, 145 Rome St., Melville, and James S. Wepsic, 84 Prince St., Jamaica Plains, both of N.Y.

Filed Dec. 14, 1970, Ser. No. 97,987
Int. Cl. A61n 1/04
U.S. Cl. 128—418 13 Claims



An electrode for the stimulation of the sciatic nerve is disclosed, the electrode being comprised of a pair of physiologically inert plastic strips each of which has a plurality of contact means fixed thereto. The contact or electrode means which preferably are formed of platinum comprise a plurality of buttons positioned on opposite sides the sciatic nerve and are oriented by the surgeon with respect to each other to achieve optimum pain inhibition. When properly placed, the two plastic members are suitably secured to each other. External power means that are electrically coupled to the contact buttons by conductive leads provide selective stimulation of the sciatic nerve in order to relieve pain. The conductive leads for the contact buttons that are not coupled to the source of electrical power are severed.

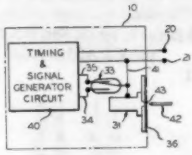
The aforementioned abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,738,369

BODY ORGAN STIMULATOR FUNCTION CONTROL SWITCH

Theodore P. Adams, and David L. Bowers, both of Wauwatosa, Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 22, 1971, Ser. No. 136,329
Int. Cl. A61n 1/36
U.S. Cl. 128—419 P 11 Claims



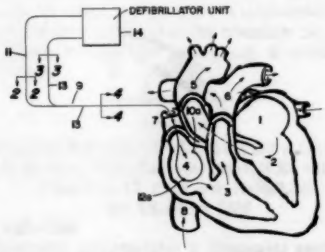
An implantable body organ stimulator such as an electronic cardiac pacer has a magnetic reed switch and a switch operator embedded in its encapsulation. The state of the reed switch may be changed to alter any one of several functional characteristics of the stimulator with a switch operator which controls the operating state. The operator comprises a magnet which is movable between two positions in a guide tube which is adjacent the reed switch. The magnet may be urged from one position to another with a needle that enters the interior of the guide tube through an aperture in a plate that is embedded in the encapsulation. Means are provided in one embodiment for preventing restoration of the magnet to its original position.

3,738,370

METHOD OF DEFIBRILLATION WITH ELECTRODES LOCATED IN THE ATRIUM

Bernard L. Charms, 2921 S. Park Boulevard, Shaker Heights, Ohio

Filed Jan. 18, 1971, Ser. No. 107,312
Int. Cl. A61n 1/36
U.S. Cl. 128—419 D 7 Claims



A bi-polar coaxial cable or catheter is passed transvenously into the right atrium or auricle of the heart, and the electrodes or poles of the cable are so positioned within the atrium and

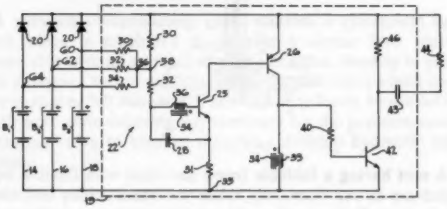
exposed to the interior of the atrium that when the cable is connected to a defibrillator unit, direct current shocks of very low energy or intensity may be transmitted by said unit through the cable to effect defibrillation, without causing pain or appreciable discomfort to the patient undergoing defibrillation.

3,738,371

CARDIAC PACERS WITH SOURCE CONDITION-RESPONSIVE RATE

William J. Raddi; Robert W. Johnson, and Joseph W. Smithmyer, all of Philadelphia, Pa., assignors to ESB Incorporated, Philadelphia, Pa.

Filed Dec. 11, 1970, Ser. No. 97,254
Int. Cl. A61n *1/36*
U.S. Cl. 128—419 P **7 Claims**



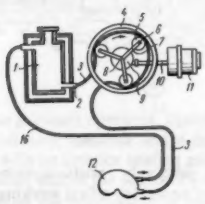
In a pulse generating circuit, such as an implantable cardiac pacer having parallel connected batteries as its power supply, additional resistors are connected between the power supply and the pulse generating circuit of the pacer and form a part of the pulse generating circuit to indicate by a change in pulse rate when one or more cells of the batteries of the power supply fail prematurely.

3,738,372

APPARATUS FOR APPLICATION OF LOCAL HYPOTHERMY TO THE KIDNEY

Tamaz Iosifovich Shioshvili, ul. Barnova, 148, kv. 17, Tbilisi, U.S.S.R.

Filed Jan. 13, 1972, Ser. No. 217,565
Int. Cl. A61f *7/00*
U.S. Cl. 128—400 **2 Claims**



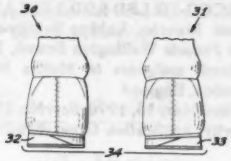
An apparatus for the application of local hypothermy to the kidney, comprising a kidney-cooling heat exchanger made as a confined chamber whose inside surface is so shaped as to suit the renal shape. The walls of the cooling heat exchanger are made double for the refrigerant to circulate therebetween, and fabricated from an elastic material.

3,738,373

SHOE HEEL WITH CUSHION WEDGE

John J. Glancy, 6280 Dean Road, Indianapolis, Ind.

Filed Aug. 11, 1971, Ser. No. 170,815
Int. Cl. A61f *5/14*
U.S. Cl. 128—585 **4 Claims**



A shoe heel having a wedge configured cushion. A ground engaging plate is mounted beneath the rear portion of the shoe with the cushion wedge disposed therebetween. Spacing means mounted between the shoe sole and plate extends from the edge of the heel to partially across the heel. The cushion extends from the spacing means across the remainder of the heel to a position flush with the outside edge of the heel. The cushion has a smaller thickness adjacent to the spacing means as compared to a greater thickness outwardly thereof.

3,738,374

CIGAR OR CIGARETTE HAVING SUBSTITUTE FILLER

Harry Bennett, Miami Beach, Fla., assignor to B. R. Laboratory, Miami Beach, Fla.

Filed Mar. 5, 1970, Ser. No. 16,964
Int. Cl. A24b *15/00*; A24d *1/18*
U.S. Cl. 131—2 **1 Claim**

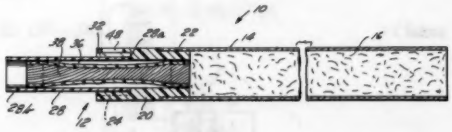
This invention pertains to the production of cigars or cigarettes which have a tobacco substitute filler and a wrapper and which on burning produce vapors and condensates free from nicotine, and which have only a minute amount of tars. The tobacco substitute is made from carbon or graphite fibers, mat or cloth associated with an oxidizing agent. Other agents are added as needed or desired to improve texture or form, to give an improved burn, or to make the product more salable or economical to manufacture. The wrapper includes an impregnation of an ashing ingredient.

3,738,375

ADJUSTABLE TOBACCO SMOKE FILTER DEVICE

George C. Doumas, 1354 First Avenue, New York, N.Y.

Filed July 8, 1971, Ser. No. 160,833
Int. Cl. A24d *01/04*; A24f *07/04*
U.S. Cl. 131—10.3 **5 Claims**



An adjustable tobacco smoke filter device for attachment to cigarettes, cigars and the like has a filter body with an internal passage and a mouthpiece with a similar internal passage. The mouthpiece has one end disposed adjacent the filter body with the internal passages in aligned relationship. Advantageously the mouthpiece is mounted for manual rotation relative to the filter body. A filter wrapper of resilient material is provided with a compressible tobacco smoke filter material disposed therein. The resilient filter wrapper is open at opposite ends and provides a smoke passage for tobacco smoke through the filter material. The filter wrapper is disposed in the internal passages of the filter body and the mouthpiece with one end fixed to the filter body and with its opposite end fixed to the

mouthpiece. Upon manual rotation of the mouthpiece the filter wrapper is twisted to restrict the smoke passage therethrough.

3,738,376

MANUFACTURE OF CIGARETTES AND OTHER TOBACCO-FILLED ROD-LIKE ARTICLES

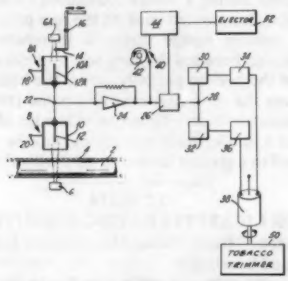
Francis Auguste Maurice Labbe, Neuilly-sur-Seine, France, and Gordon Francis Wellington Powell, Deptford, London, S.E.8, England, assignors to Molins Machine Company Limited, London, England

Filed Mar. 13, 1970, Ser. No. 19,286

Claims priority, application Great Britain, Mar. 14, 1969, 13,685/69

Int. Cl. A24c *05/34*

U.S. Cl. 131—21 B **7 Claims**



A device which scans the density of successive in crements of a cigarette rod produced in a cigarette making machine, is used to control the mean weight of the tobacco in that rod with a view toward maintaining substantially constant the number of cigarettes produced having a weight falling below a preselected level. Signals produced by the scanner are used to control the quantity of excess tobacco removed from the filler stream formed therein by a trimming device, thereby controlling the quantity of tobacco placed in said rod.

3,738,377

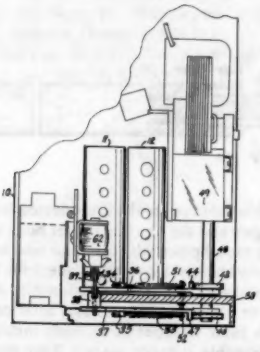
COIN PAY-OUT MEANS FOR COIN CHANGERS

Joseph A. Lotspeich, St. Paul, Minn., assignor to Coin Acceptors, Inc., St. Louis, Mo.

Filed July 17, 1970, Ser. No. 55,855

Int. Cl. G07d *1/06*

U.S. Cl. 133—2 **2 Claims**



A coin changer with provisions for paying out coins of different denomination has slide members for discharging the change coins singly from storage tubes. The slide members are actuated by individual cams on a common drive shaft, selectively, under the control of an electromagnetic latch device that locks or releases the coin pay-out slides as determined by the amount of over-payment deposited in the changer.

3,738,378

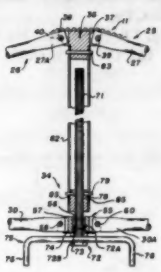
UMBRELLA TENT

Wayne M. Williams, 7125 East Hastings Street, North, North Burnaby, British Columbia, Canada

Filed July 19, 1971, Ser. No. 163,658

Int. Cl. A45f *1/04*

U.S. Cl. 135—2 **2 Claims**



A tent having a foldable frame provided with flexible legs which are bowed outwardly, when the frame is fully unfolded into a mutually supporting relationship with an enclosing canvas cover. A mechanical drive is provided in the frame for tensioning the legs and the canvas cover, the drive providing a positive lock against accidental collapse of the tent.

3,738,379

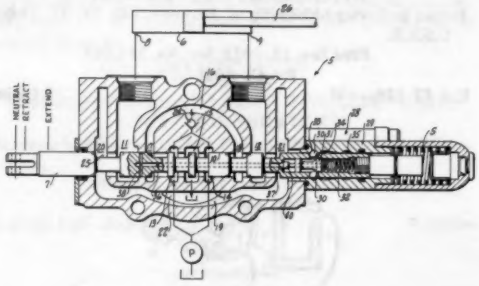
CONTROL VALVE WITH SEMI-AUTOMATICALLY INDEXED VALVE ELEMENT

Raud A. Wilke, Milwaukee, Wis., assignor to Koehring Company, Milwaukee, Wis.

Filed Aug. 2, 1971, Ser. No. 167,926

Int. Cl. F15b *11/15*

U.S. Cl. 137—106 **4 Claims**



A return spring yieldingly resists movement of a control valve element out of neutral to a first working position. Detent means is automatically operable to releasably hold the valve element in said first working position as well as in a flow reversing second working position between neutral and said first working position. In each working position, the valve element is released from the detent means whenever supply fluid pressure rises to a predetermined kick-out value by means of detent disabling means which is cooperable with the return spring to automatically effect stepwise return motion of the valve element from said first to said second working position thereof and then from said second working position back to neutral.

3,738,380

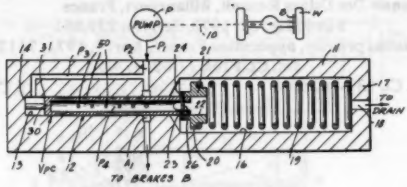
PRESSURE CONTROL VALVE

George A. Berman, Detroit, and Graydon J. Choinski, Utica, both of Mich., assignors to TRW Inc., Cleveland, Ohio

Division of Ser. No. 878,665, Nov. 21, 1969, Pat. No. 3,597,010. This application Oct. 23, 1970, Ser. No. 83,494

Int. Cl. F16k *17/10*

U.S. Cl. 137—115 6 Claims



A pressure-compensating valve wherein a cylindrical bar stock piece is machined to provide a center flow pintle cooperable with an annular scanning annulus, thereby to provide a stepped and partially infinitely variable valve which permits partial or full diameter area sections to freely be sensed in a balanced state relieving any tendency for the pressure-compensating valve to bind or otherwise develop hydraulic imbalance.

3,738,381

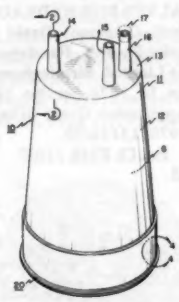
INVERTED FLUID COLLECTION RECEPTACLE

LeGrand K. Holbrook, Salt Lake City, Utah, assignor to Medical Development Corporation, Salt Lake City, Utah

Filed Dec. 16, 1970, Ser. No. 98,566

Int. Cl. F16k *45/00*

U.S. Cl. 137—199 1 Claim



Reduced gaseous pressure operated, liquid receptacle structure having an enclosure member and a bottom cover. The latter is provided with an interior sealing protuberance which seals against the inner wall of the enclosure member, such seal being increased upon the application of reduced pressure of the interior of the structure. A one-piece, fixed differential valve device is disposed in a vacuum port of the enclosure member to permit the passage of air therethrough, but not the passage of liquids such as blood. The port containing the valve device is tapered or otherwise configured such that the valve will not be drawn toward the reduced pressure source. The enclosure member is constructed to have ports at its base or top such that pin means and corresponding guide apertures in the mold structure forming the enclosure may be accommodated, so as to preserve uniform wall thickness in the enclosure member during the formation thereof.

3,738,382

METHOD FOR THE STERILIZATION OF A SYSTEM FOR PREPARATION OF A LIQUID MIXTURE

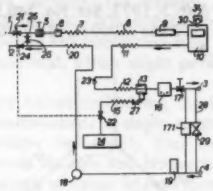
Christian Cappelen, Jr., Rikshospitalet, Oslo, and Lars Grimsrud, Norges Tekniske Hogskole, 7000 Trondheim, both of Norway

Filed Nov. 10, 1970, Ser. No. 88,419

Claims priority, application Norway, Nov. 11, 1969, 4462/69

Int. Cl. F16k *49/00*

U.S. Cl. 137—340 1 Claim



A self-sterilizing liquid mixer system is provided for the preparation of a mixture of a carrier liquid and a concentrate, particularly for the production of a dialysis liquid for a dialyser, connected to the mixture outlet conduit of said system, a return conduit receiving used liquid mixture from the dialyser to be discharged from the system through a discharge outlet.

In the inlet conduit of the carrier liquid, series connected heating and outgasing means are provided normally operative to heat said carrier liquid close to its boiling point and subsequently outgasing the same through a gas outlet to the atmosphere. For the sterilizing of the system after an inoperative period the supplies of the carrier liquid and the concentrate are cut off, while said inlet conduit of the carrier liquid is connected with the discharge outlet, and said mixture outlet conduit is connected to the return conduit, simultaneously pressure dependently closing the gas outlet by means of a loaded closure.

These measures enable a closed circulation of the liquid present in the system and a heating of the circulating liquid by means of said heating means to a selected sterilizing temperature well above said boiling point and determined by the pressure dependent, loaded closure of the gas outlet.

3,738,383

STRUCTURE WITH PROTECTIVE COVERING AGAINST AMBIENT INFLUENCES

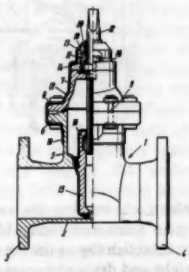
Walfried David, Maxdorf, Germany, assignor to Bopp & Reuther GmbH, Mannheim, Germany

Filed Nov. 11, 1971, Ser. No. 197,807

Claims priority, application Germany, Nov. 19, 1970, P 20 56 860.9

Int. Cl. F16k *27/06*

U.S. Cl. 137—381 9 Claims



A valve housing, connected pipe flanges or similar structure is surrounded by a one-piece sheath of elastically distendable

material resistance to the ambient influences against which the structure is to be protected. The hollow interior of the sheath has an interior contour which corresponds to the outer contour of the structure and the sheath tightly encases the structure in surface-to-surface relationship.

3,738,384

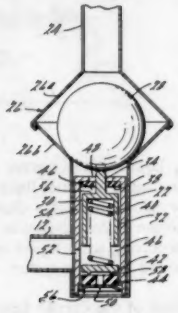
FIVE-WAY CONTROL VALVE AND SYSTEM

John F. Hall, Bloomfield Hills, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Apr. 3, 1972, Ser. No. 240,503

Int. Cl. F16k *17/00*; **G05d** *27/00*

U.S. Cl. 137—493.9 **3 Claims**



A five-way valve which performs five functions: pressure relief, vacuum relief, rollover shut-off, overfill limiting and anti-surge control for use in the fuel evaporative control system of motor vehicles.

3,738,385

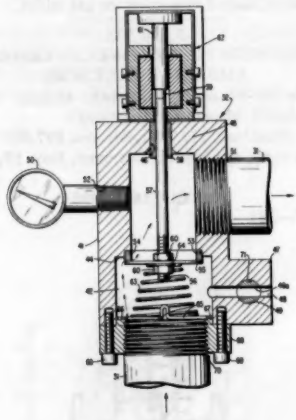
STEAM CONTROL METHOD AND APPARATUS FOR FABRIC PRESSING MACHINE

John T. Gerod, 312 N. Lincoln Avenue, Scranton, Pa.

Filed Sept. 21, 1970, Ser. No. 73,775

Int. Cl. F16k *11/10*

U.S. Cl. 137—606 **5 Claims**



A method for selectively varying the vacuum pressure applied to the buck of a buck and swingable head type fabric pressing machine to establish the optimum vacuum pressure in accord with the weight and drying characteristics of the fabric to be pressed to assure effective drying and setting of the press in the fabric and a vacuum valve for presetting the vacuum pressure to the optimum value by adjustably venting the valve to the atmosphere. The valve is characterized by a vacuum line coupling means that may be removed from the valve without breaking the line connection to gain access to the valve biasing spring means, the valve, and valve seat for the purpose of servicing and replacement.

3,738,386

PRESSURE-FLUID ELECTROMAGNETIC VALVES

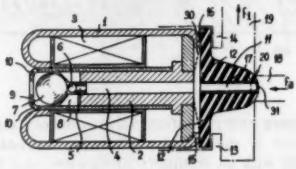
Philippe Quemerais, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt, France

Filed Mar. 31, 1972, Ser. No. 239,882

Claims priority, application France, Apr. 9, 1971, 7112775

Int. Cl. F16k *11/02, 31/40*

U.S. Cl. 137—625.64 **6 Claims**



This electromagnetic valve comprising a monitored valve member adapted to control the passage of a fluid under pressure from a supply duct to at least one outlet or load duct comprises in a shielding case a core surrounded by a coil winding and formed with an axial monitoring passage adapted in the energised condition of said winding to be closed by a rigid valve member responsive to the magnetic pull, said passage being connected to a variable-volume chamber of which one wall consists of one portion of a flexible valve member adapted to close an outlet orifice, said chamber being on the other hand connected to said fluid pressure supply duct.

3,738,387

CONTROL VALVES FOR HYDRAULIC FLUIDS

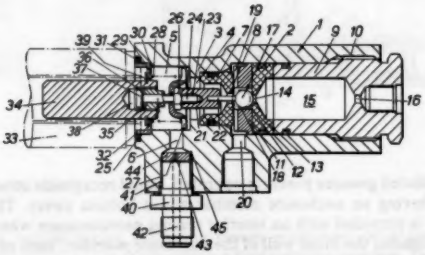
Brian Ingram, Balsall Common; David Anthony Harries, Solihull, and Lancelot Phoenix, Handsworth, all of England, assignors to Girling Limited, Birmingham, England

Filed Jan. 11, 1971, Ser. No. 105,356

Claims priority, application Great Britain, Feb. 28, 1970, 9769/70; Mar. 18, 1970, 13116/70

Int. Cl. F16k *11/00*

U.S. Cl. 137—625.65 **5 Claims**

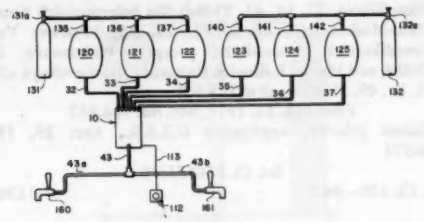


In a solenoid-operated control valve a spring loaded push-rod assembly for urging a valve member into engagement with a seating in a housing is coupled to the armature of the solenoid by a lost-motion connection permiting movement of the armature relative to the solenoid through a limited range. Movement of the armature in a direction towards the seating is arrested by a fixed abutment after the push-rod assembly has engaged with a stop limiting movement of the push-rod in a direction to urge the valve member into engagement with the seating and before the armature has moved relative to the push-rod through the said limited range.

3,738,388
VALVE SYSTEM

Joe B. Parker, Longmont, and Thomas A. McCasland, Evergreen, both of Colo., assignors to Colorado Valve Co., Westminster, Colo.

Filed June 23, 1971, Ser. No. 155,850
Int. Cl. F16k *19/00*
U.S. Cl. 137—627 **8 Claims**

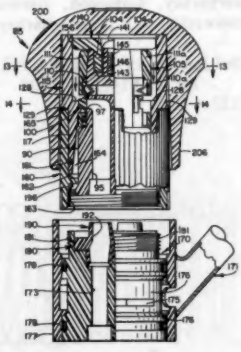


A valve system for selectively connecting a single dispensing tap or outlet with a selected one of a plurality of fluid supply sources. The valve system has plastic tube sections equal in number to the number of fluid sources and aligned in generally parallel relationship and connected with a manifold having a single outlet. A pivotally supported valve finger is secured over each plastic tube section and movable between positions at which the tube is open and squeezed closed. The valve fingers are actuated by a rotatable cylindrical cam having cam surfaces which hold all but one of the valve fingers at closed positions at any selected position of rotation of the cam. The cam is rotatable manually or by a remotely controlled solenoid. The valve system is useful, for example, with a plurality of beer kegs for individually communicating each of the kegs one at a time, as desired, with a single outlet tap from the system.

3,738,389
DIAPHRAGM VALVES FOR LIQUIDS

George S. Cole; Richard L. Ritzenthaler, and Don C. Arnold, all of 601 Skokie Boulevard, Northbrook, Ill.

Filed Aug. 27, 1970, Ser. No. 67,346
Int. Cl. F16k *11/14, 19/00*
U.S. Cl. 137—636.1 **17 Claims**



Diaphragm valves for liquids wherein a valve body has a surface recess which receives a resilient valve member of rubber-type material of conforming size. An inlet port from a supply duct and an outlet port to a discharge duct are located in the valve body recess in spaced relation with the recess walls and bottom engaged by the valve member. A retainer holds the valve member in the recess and applies sufficient pressure on the marginal portion of the valve member to establish a liquid-proof seal between the valve member and valve body which exists at least at low liquid pressure. The resilient valve member responds to liquid pressure within the valve, and the seal with the valve body is enhanced in proportion to liquid pressure, giving the valve a self-sealing characteristic over a wide range of liquid pressures. A movable actuator has a cam surface which positions the resilient valve member in relation to the inlet port, closing the port in one position, and in other positions varying the spacing between the valve member and port for varying the rate of flow through the valve. The various parts of the valve, including the actuator, are preassembled economically, and the valve is installed at the point of use as a unit, thereby avoiding any installation step, such as a conventional compression seal, which might permit leakage in the valve.

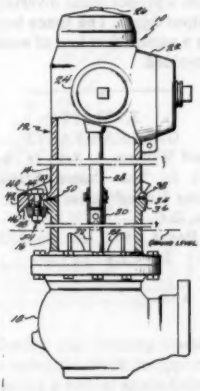
Two exemplary valves embodying the invention are disclosed. One accommodates a single supply line, while the other accommodates two supply lines (e.g. hot and cold water), and controls the rate and proportion of flow through the valve with a single actuator. In both forms of the invention the liquid handled by the valve flows from supply duct to discharge duct without traversing a region within the valve from which leakage is possible as a result of abuse or improper installation.

Valves embodying the invention easily can be installed by the user without tools of any kind, and the structure involved in installation is such that leakage at the couplings for the supply and discharge lines is virtually impossible.

3,738,390
FIRE HYDRANT

Lawrence F. Luckenbill, Decatur, Ill., assignor to Mueller Co., Decatur, Ill.

Filed Sept. 7, 1971, Ser. No. 178,242
Int. Cl. E03b *9/12*; F16d *9/00*
U.S. Cl. 137—797 **18 Claims**



A safety coupling for connecting two sections of a vertical standard-like member such as a fire hydrant, light pole, sign post, vertical post of a guard rail or similar accessories wherein the upper section is intended to move when subjected to a lateral shock from any angle without damage to the lower anchored or support section. The upper and lower sections are provided with peripheral flanges on their abutting ends and a plurality of frangible clips are angularly spaced about the standard-like member and engage the undersurface of both flanges, the clips being held in position against the flanges by bolts provided with weakening grooves which permit the bolts to bend or shear. The combined use of frangible clips and frangible bolts permits the upper section to be struck at different angles of impact such as in direct line with a bolt and clip arrangement or intermediate a pair of spaced bolt and clip arrangements and when so struck the upper section may be knocked over without damage to the lower section thereby permitting repair without replacement of the lower or anchored section.

3,738,391

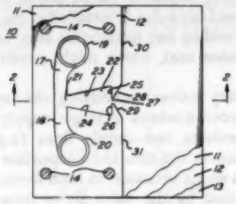
FLUID PRESSURE COMPARATOR

Robert B. Adams, Tredyffrein Township, Chester County, Pa., assignor to Moore Products Co., Spring House, Pa.

Continuation-in-part of Ser. No. 828,638, May 28, 1969, abandoned. This application Oct. 30, 1970, Ser. No. 85,685

Int. Cl. F15c *1/14*

U.S. Cl. 137—823 11 Claims



A fluid pressure comparator is provided which imposes a minimal loading of either of the pressure signals and which at the same time provides a high degree of resolution in its output for relatively small pressure changes in the signal input. The comparator includes a chamber with a fluid inlet having a pair of delivery passageways for the fluids whose pressures are to be compared and a fluid outlet providing a resistance to flow greater than that of either of the delivery passageways. The passageways may be inclined with respect to the longitudinal axis of the chamber or opposed. The fluid exiting from fluid outlet may provide a directional signal and this signal may be utilized with a proportional diverting valve to provide a high capacity output signal. The space beyond the fluid outlet may be of such a nature that loss of sensitivity on account of dirt build up is avoided.

3,738,392

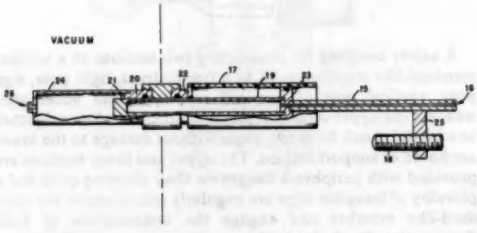
GAS LEAK VALVE

Allen M. Veach, and William A. Bell, Jr., both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Dec. 1, 1971, Ser. No. 203,747

Int. Cl. F15d *1/00*

U.S. Cl. 138—46 2 Claims



A gas leak valve is provided that uses a hollow, porous-wall, closed-end tube communicating with the gas to be metered and slidable past a vacuum seal so as to expose more or less of the porous tube wall to the vacuum region and hence to controllably leak the gas through the porous wall into the vacuum system.

3,738,393

GATE FOR PIPE CONDUITS OF PNEUMATIC RABBIT CONVEYORS

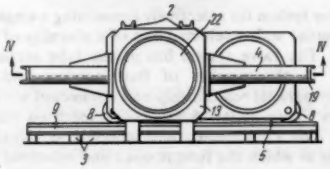
Adolf Moritsovich Alexandrov, Federativny prospekt, 6, korpus 3, kv. 8, Moscow; Ippolit Davidovich Suladze, prospekt Chavchavadze, 11, kv. 41, Tbilisi; Ruben Dzhangirovich Balaian, Volkovskaya ulitsa, 9, kv. 31, Ljubertsky Moskovskaya oblast; Vladimir Efimovich Agiltsky, Zatsepsky val, 6/13, kv. 61, Moscow; Avtandil Semenovich Kakhniashvili, ulitsa Eliava, 37, kv. 41, Tbilisi; Ilia Solomonivich Kantor, Malo-Moskovskaya ulitsa, 31, kv. 45, Moscow; Vazha Venediktovich Dzhanelidze, prospekt Plekhanova, 140, Tbilisi, and Matvei Iosifovich Rozenfeld, Borisovskaya ulitsa, 21, kv. 49, Moscow, all of U.S.S.R.

Filed Feb. 12, 1971, Ser. No. 114,867

Claims priority, application U.S.S.R., Apr. 29, 1970, 1426374

Int. Cl. F16l *55/10*

U.S. Cl. 138—94.3 3 Claims



A gate for pipe conduits of pneumatic rabbit conveyors, in which two rigidly interconnected branch pipes having a diameter corresponding to that of the pipe conduit accommodate therebetween, a gate valve having an opening for the passage of rabbits and working fluid and being displaceable with the aid of a drive. The branch pipes are interconnected by means of tie pieces, while the gate valve is defined by a section of pipe, having a diameter corresponding to that of the branch pipes, and two packing supporting sides.

3,738,394

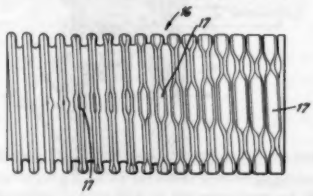
FLEXIBLE GROOVED PIPE

Leonard Westerbarkey, Gutersloh, Germany, assignor to Firma Westflexwerk L. & F., Westerbarkey, Gutersloh, Germany

Filed Jan. 29, 1971, Ser. No. 111,008

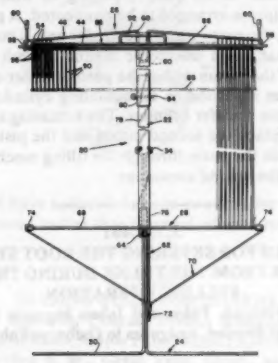
Int. Cl. F16l *9/18, 9/00*

U.S. Cl. 138—122 4 Claims



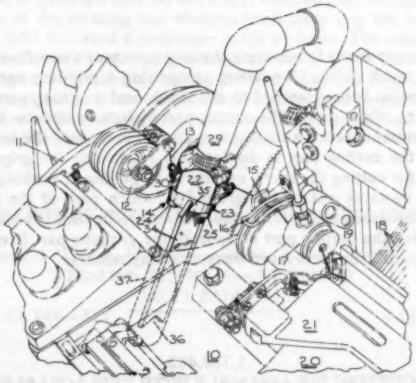
A helically-corrugated flexible pipe wound from metal foil or sheet metal strips is characterized in that the grooves or ribs are upset or pressed in a gradually increasing manner toward the ends of the pipe.

3,738,395
HAND LOOM
William K. Stars, Durham, N.C., assignor to The Craftool Company, Inc., Wood-Ridge, N.J.
Filed June 2, 1971, Ser. No. 149,236
Int. Cl. D03d 29/00
U.S. Cl. 139—29 15 Claims



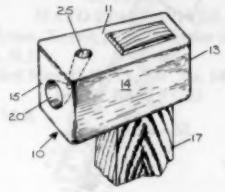
A hand loom having an improved upper warp retaining assembly for substantially increasing the threads per inch supported thereby and a lower warp retaining and stringing assembly for automatically adjusting the tension applied to the warp and for facilitating stringing of the warp threads. A warp base stand supports the hand loom support frame in an upright position. Templates are adapted to be releasably secured to the beater or the upper warp retaining assembly for varying the warp thread shed combinations giving the loom the advantage of multi-harness weaving.

3,738,396
WEFT STORAGE DEVICE
Ephrem A. Lussier, Milford, Mass., assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Filed Mar. 27, 1972, Ser. No. 238,041
Int. Cl. D03d 47/34
U.S. Cl. 139—122 2 Claims



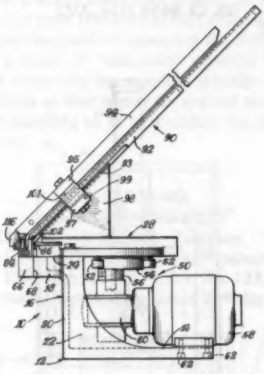
A weft storage device for shuttleless looms having a stationary weft supply which includes a diverting member for separating a source of air under pressure into two streams within which a loop of weft yarn can be formed and temporarily stored for subsequent insertion into a shed formed by cooperating warp threads.

3,738,397
LOOM PICKER
Joseph M. Budzyna, East Douglas, Mass., assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Filed May 31, 1972, Ser. No. 258,409
Int. Cl. D03d 49/36
U.S. Cl. 139—159 4 Claims



An improved picker for use in conjunction with shuttle type looms wherein a lubricant is disposed within the picker body to lubricate the tip of the shuttle when it is in the shuttle receiving recess of the picker.

3,738,398
APPARATUS FOR CUTTING AND FORMING LEADS OF ELECTRICAL COMPONENTS
Robert K. Galloway, Oshkosh, Wis., assignor to R. A. Saranton Industries, Inc., Hoopeston, Ill.
Filed July 6, 1971, Ser. No. 159,708
Int. Cl. B21f 1/00, 11/00
U.S. Cl. 140—1 14 Claims

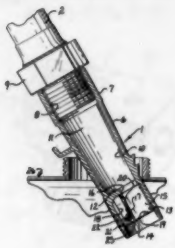


Appaatus for cutting and forming leads of electrical components utilizes a movable block reciprocally driven relative to a fixed block having a pair of spaced shearing surfaces that cooperate with a pair of cutters carried by the movable block to cut the ends of an electrical component supported crosswise to the cutters on a component carrying section of the movable block. The component carrying section has a stop to catch the inner ends of the component after the cutting operation and to hold the component as the component carrying section moves between a pair of opposing lead forming surfaces on the fixed block.

3,738,399
FLOW NOZZLE AND VALVE
Lorraine O. Kuhlman, Monroe City, Mo., assignor to Laco Manufacturing Company, North Kansas City, Mo.
Filed June 21, 1971, Ser. No. 154,804
Int. Cl. B65b 57/00; B67c 3/00
U.S. Cl. 141—215 3 Claims

A flow nozzle and valve for use with a flow member connected to a pump operative to selectively move fluid through

the flow member and into the flow nozzle includes a tubular body member having an inlet end portion and a discharge end and a wall defining a flow passage tapering from the inlet end to a dam forming a reduced flow area and having an upper surface or crest extending transversely across the flow passage. A



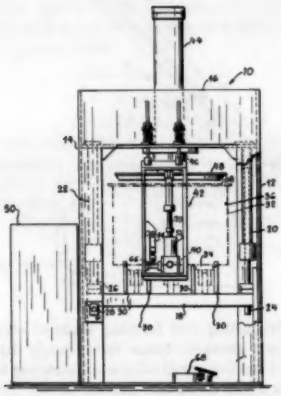
valve member is positioned between the dam and the discharge end and movable between an open flow permitting position during operation of the pump and a flow interrupting position substantially restricting flow through the flow passage upon filling of a container having the flow nozzle therein.

3,738,400

APPARATUS FOR FILLING A CONTAINER WITH A PRESELECTED QUANTITY OF A HIGHLY VISCOUS PASTE

Adam Weil, Steinmuhle, 6201 Wicker, and Herbert Weil, 623 Frankfurt-Hoechst, Markt 1, Germany

Filed Mar. 31, 1971, Ser. No. 129,891
Int. Cl. B65b *1/24, 3/12*
U.S. Cl. 141—73 **7 Claims**



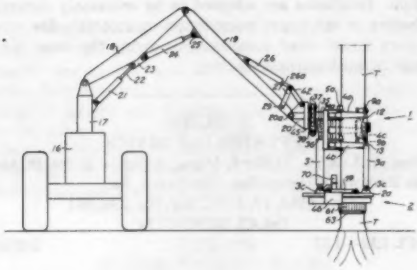
The apparatus includes a pair of vertical side members arranged in parallel spaced relation and connected to each other by a top transverse member. A platform is positioned between the side members and is movable vertically thereto by means of either telescopic members connected to the platform and the transverse top member or by means to engage a vertically movable piston rod movably connected to the top transverse member. A container is suitably supported on the platform and has an inner chamber with a generally cylindrical configuration, a top inlet opening and a bottom outlet opening. A piston head having substantially the same configuration as the container chamber is secured to the piston rod and is arranged to move downwardly within the container to extrude a highly viscous paste through the outlet opening. The piston is movable vertically relative to the container chamber by a suitable actuating mechanism. The platform with the container thereon is arranged to be moved to a preselected elevation and stop means engage the platform at this elevation. A filling mechanism is suitably connected to the vertical side members and has an inlet opening connectable to the container outlet opening at the preselected elevation by a quick disconnect coupling. The filling mechanism includes a two-way valve to provide a flow passageway between the inlet opening and a paste transfer cylinder, and a passageway from the paste transfer cylinder to an outlet opening to which a tube or second container is arranged to be connected. A piston is positioned within the paste transfer cylinder and is connected to a piston rod that has a telescopic means to limit vertical displacement of the piston within the paste transfer cylinder. The piston rod has a second in an actuating cylinder positioned above the paste transfer cylinder. The actuating cylinder is arranged to displace the second piston and the piston rod vertically to extrude the paste through the filling mechanism outlet opening into the second container.

3,738,401

APPARATUS FOR SEVERING THE ROOT SYSTEM OF THE TREE FROM THE TRUNK DURING THE TREE-FELLING OPERATION

Per Martin Wiklund, Taby, and Johan Ingemar Palm, Osterskar, both of Sweden, assignors to Ostbergs Fabriks AB, Alfta, Sweden

Filed Dec. 3, 1970, Ser. No. 94,731
Int. Cl. A01g *23/08*
U.S. Cl. 144—34 R **2 Claims**



An apparatus for severing the root system of a tree from the tree trunk during tree-felling comprising a gripping part, in operation being clamped to the trunk, and a cutting part for cutting of the roots. The cutting part includes a circular knife of interconnected knives arranged to encompass the trunk, and the cutting part is displaceable relative to the gripping part for cutting the roots, usually while pulling or pushing the tree upwards out of the ground in which part of the root system remains. Jacks or other power mechanism is used for moving the cutting part away from the gripping part fixed to the trunk. Timber is saved since no stump remains.

3,738,402

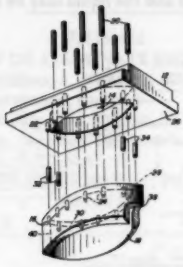
CUTTING DIE ASSEMBLY WITH REPLACEABLE BLADES

Tallyrand Cross, 4605 Farm Valley Road, Medford, Oreg.

Filed Aug. 31, 1971, Ser. No. 176,537
Int. Cl. B27m *1/04*
U.S. Cl. 144—197 **8 Claims**

A cutting die assembly comprised of male and female die structures each being of multi-piece construction including a

rigid mounting base and cutting blades together with means for convenient disassembly for replacement of the cutting

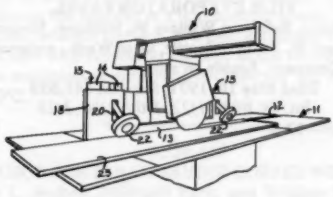


blades which have suffered damage or excessive wear, thereby permitting reuse, rather than disposal, of each mounting base.

3,738,403
BIASING GUIDE FOR BOARDS

Elmer I. C. Schwoch, Conrad, Mont.; Richard L. Schwoch, 1440 Halgren Road, Maple Plain, Minn.; Robert O. Schwoch, 336 Riverview 6 W., Great Falls, Mont., and William E. Schwoch, 14575 Danbury Avenue W., Rosemount, Minn.

Filed May 19, 1971, Ser. No. 144,727
Int. Cl. B27b *5/06;* **B25d** *7/06*
U.S. Cl. 144—249 B **5 Claims**

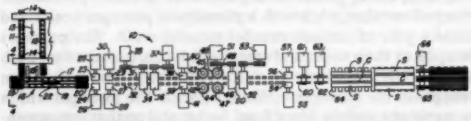


A board-engaging device for saws and the like, designed to laterally urge boards toward a fence or guide during ripping and similar operations where it is necessary that each board move in a straight path for accuracy. Inclined rolls at opposite sides of the rotating tool element frictionally grip the board and hold it toward a stationary guide or fence. The rolls are vertically movable, being biased toward a work table by springs or other similar biasing devices. They can be pivoted on an attachment assembly selectively mounted to the table surface of the tool, or can be alternately mounted in a permanent fashion directly upon the table.

3,738,404
METHOD OF PRODUCING DRESSED LUMBER FROM LOGS

Willard H. Walker, 36739 Magnolia St., Newark, Calif.

Filed Feb. 22, 1971, Ser. No. 117,442
Int. Cl. B27d *1/00*
U.S. Cl. 144—312 **9 Claims**



A log is shaped to form a stick, which is then planed along longitudinal surfaces so that vertical dimensions of the stick are within tolerances for each size of dressed lumber to be cut therefrom while transverse horizontal dimensions of the stick equal the sum of horizontal dimensions for sizes of dressed lumber to be cut therefrom plus an allowance for each saw cut to be made, and the planed stick is sawed longitudinally with gang planer saws to produce dressed lumber.

3,738,405
MAYO STAND COVER

Richard E. Ericson, Keene, N.H., assignor to C. R. Bard, Inc., Murray Hill, N.J.

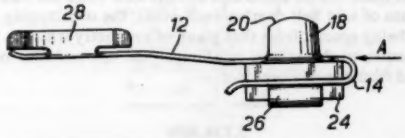
Filed May 25, 1971, Ser. No. 146,717
Int. Cl. B65d *65/02*
U.S. Cl. 150—52 R **4 Claims**

A cover for a Mayo Stand, comprising an elongated bag of woven or non-woven fabric or plastic sheeting having affixed to the bag area designed to constitute the instrument-supporting surface a sheet of "non-skid" material such as foamed plastic. The cover can be supplied initially in a folded and cuffed condition so that it may be applied to the stand with a minimum of handling so as to maintain the sterility of all exposed surfaces.

3,738,406
RETAINING CLIP

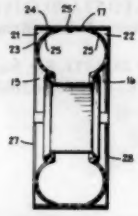
Malcolm Clarence Williams, Caerleon, Monmouthshire, Wales, assignor to Girling Limited, Birmingham, England

Filed Mar. 11, 1971, Ser. No. 123,260
Claims priority, application Great Britain, Mar. 12, 1970, 11,873/70
Int. Cl. F16b *39/22*
U.S. Cl. 151—41.75 **6 Claims**



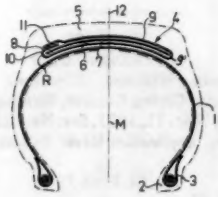
The invention concerns retaining clips capable of securing a bolt or the like and is particularly useful when used in conjunction with vehicle shoe drum brake shoes having replaceable lining components. The clip has an elongated arm carrying resilient members for locating in a slot, for example in a brake shoe web, screw engaging means to secure a bolt or screw, and a pair of opposed lugs which grip the bolt or screw and lock same against further rotation.

3,738,407
ROLLER FOR MOUNTING ON THE TIRES OF A TRACTOR
Dale I. Deckert, 1295 Pleasant St., Noblesville, Ind.
Filed Apr. 30, 1971, Ser. No. 138,909
Int. Cl. B60c 27/00
U.S. Cl. 152—175 5 Claims



A belt roller fittable onto a tractor tire for rolling of the ground. A continuous sheet extends around the tire and is in contact with the tire tread. A plurality of brackets are mounted interiorly to the sheet and project radially inward so as to grip both the tread surface and side wall of the tire to prevent relative motion between the tire and sheet.

3,738,408
PNEUMATIC TIRE WITH AN ASYMMETRICAL FOLDED BELT
Heinz-Dieter Rach, and Ekkehard Grollich, Hannover, both of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany
Filed Apr. 26, 1971, Ser. No. 137,422
Claims priority, application Germany, Apr. 30, 1970, P 20 21 268.4
Int. Cl. B60c 9/18
U.S. Cl. 152—361 FP 5 Claims

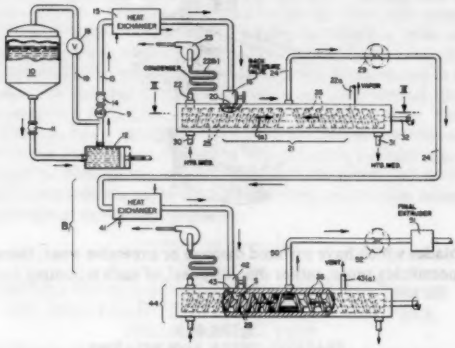


A pneumatic vehicle tire with a folded belt having a layer of pull resistant strength members, which is folded over in a direction transverse to the circumferential direction of the tire so that there will be a fold on each tire side while the free end portions of said belt overlap each other, the overlapping sections being spaced from that plane of symmetry which is perpendicular to the axis of rotation of the tire and also being spaced from the adjacent fold.

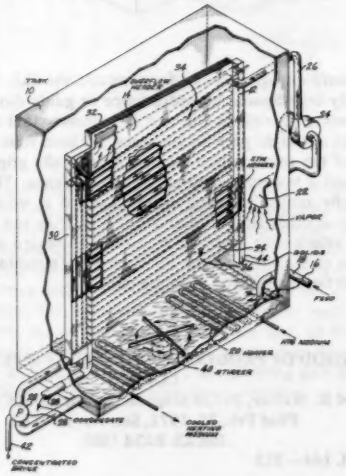
3,738,409
APPARATUS FOR FLASH-CONCENTRATING VISCOUS LIQUIDS
Richard H. Skidmore, Strafford, Pa., assignor to Welding Engineers, Inc., King of Prussia, Pa.
Filed Jan. 27, 1971, Ser. No. 110,160
Int. Cl. B01d 1/28; A01j 17/00
U.S. Cl. 159—2 E 1 Claim

A viscous fluid containing a volatile ingredient is subjected to evaporation by heating the liquid and supplying the heated liquid at a metered rate to a pump, which pump includes a housing and a pair of intermeshing screws arranged in close running clearance in the housing. The pump moves the viscous liquid material forwardly while permitting the flashed vapors to proceed through the close running clearance. The vapors are collected and the liquid may be subjected to one or more further cycles.

Gases and vapors are removed from various kinds of plastic materials in extruders through a vent containing a worm running with close working clearance in a housing which is connected into the extruder.



3,738,410
FILM EVAPORATOR PANEL
Peter M. Ricca, Bellevue; William W. Stickney, Mercer Island, and Robert W. Turner, Seattle, all of Wash., assignors to The Boeing Company, Seattle, Wash.
Filed May 10, 1971, Ser. No. 141,859
Int. Cl. B01d 1/22, 1/00, 3/08, 3/28
U.S. Cl. 159—13 B 8 Claims



An evaporator panel having extruded sections placed one on top of another, each with a plurality of passages positioned within a pair of smooth parallel exterior walls. The passages are open at their ends, and steam headers are located on both ends of the panel to permit a uniform flow of steam throughout the passages within the panel. The passages within the panel are slightly tilted from horizontal so that steam condensate that collects within the passages flows into one of the steam headers which has thus a double function, that of sup-

plying steam and of collecting condensate. The condensate is removed through an outlet at the bottom of the double-functioned header.

3,738,411

TREATMENT OF ALUMINATE DIGESTER LIQUOR

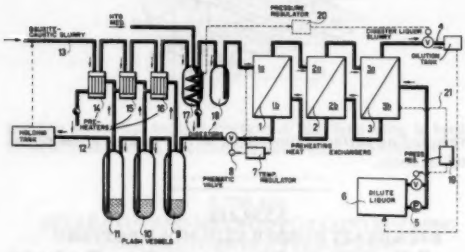
Ferenc Lazar, Tatabanya, Hungary, assignor to Tatabanyai Szenbanyak, Tatabanya, Hungary

Filed July 31, 1970, Ser. No. 59,954

Claims priority, application Austria, Aug. 5, 1969, A 7521/69

Int. Cl. B01d 7/00, 9/00; F26b 3/12; B01d 3/02; C01f 7/34; B01d 11/04

U.S. Cl. 159—47 R 4 Claims



Aluminum-containing minerals, such as bauxite, are digested in sodium aluminate liquor, wherein the digestion liquor leaves the digester at a temperature above 150°C and is conducted, without flashing, in a heat exchanger in a countercurrent flow with respect to the feed liquor for the digester so that the temperature difference between the two liquors is less than 10°C.

3,738,412

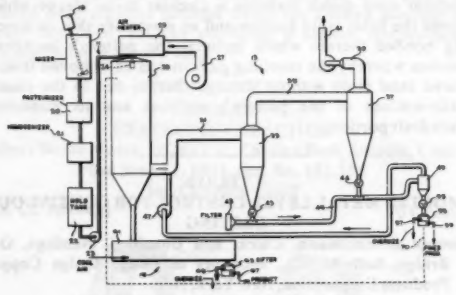
METHOD FOR SPRAY DRYING COFFEE WHITENER

Robert L. Nezbed, Highland Park, and William H. Zamzow, Glenview, both of Ill., assignors to Kraftco Corporation, New York, N.Y.

Filed Sept. 8, 1970, Ser. No. 70,030

Int. Cl. B01d 1/16, 1/00; F26b 3/12

U.S. Cl. 159—48 R 3 Claims



Method and apparatus are provided for manufacture of dry particulate food products. In the method, particles of a fluid edible dispersion are provided in the drying chamber of the spray dryer. Circulating air is introduced into the chamber. The circulating air is of a quantity, temperature and humidity sufficient to dry the particles. A fraction of the dried particles is entrained in the circulating air and is subsequently separated to provide a first fraction of particles having a relatively high bulk density. A second fraction of particles is removed from the chamber by gravity and is simultaneously conveyed and cooled to provide a product having relatively low bulk density and rapid sinkability and solubility.

3,738,413

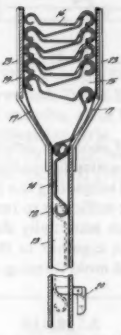
RETRACTABLE BARRIER

Raymond C. Frobosilo, 1260 East 55th Street, Brooklyn, N.Y., and Samuel W. Levine, 973 East 88th Street, Brooklyn, N.Y.

Filed July 1, 1971, Ser. No. 158,686

Int. Cl. E06b 9/00

U.S. Cl. 160—35 6 Claims



A retractable barrier for use in sealing doors, windows, gates, alleys and the like is provided in which a plurality of foldable interlocking slats are disposed in a frame, the frame having channels on each side with a lower section of sufficient depth to receive the unfolded slats and a deeper upper section of sufficient depth to receive the folded slats, and flexible bands disposed within the channels so as to frictionally engage the unfolded slats in the lower section and the folded slats in the upper section.

3,738,414

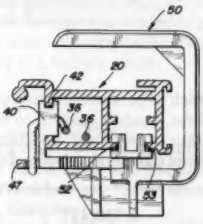
HOOK PLEAT DRAPERY SYSTEM

George H. Baker, Sr., Dunlap, Ill., assignor to Baker Drapery Corporation, Peoria, Ill.

Filed June 14, 1971, Ser. No. 152,571

Int. Cl. A47h 5/032

U.S. Cl. 160—345 4 Claims



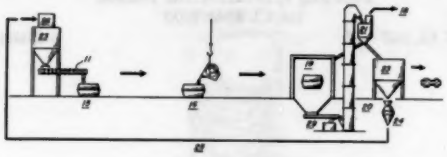
A simulated cafe drapery system in which draperies are supported by hooks from sliders carried by a track. The track has two longitudinally extending grooves, one carrying the master slides and the other carrying individual hook slides. A hook slide is interconnected mechanically with each master slide so that they move together. The track end fitting serves to support and house traverse cord pulleys and has a finial mounted thereon.

3,738,415

METHOD OF MOLDING ARTICLES AND RECLAIMING THE FOUNDRY SAND USED

James M. Planten, Deep Brook Road, Wyckoff, N.J.

Continuation-in-part of Ser. No. 73,909, Sept. 21, 1970, abandoned. This application Dec. 23, 1971, Ser. No. 211,323
Int. Cl. B22d *29/00*; B24c *3/00*
U.S. Cl. 164—5 8 Claims



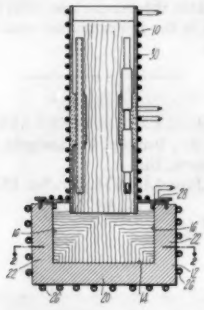
A unique method of molding articles is provided, which comprises forming a chemically bonded sand mold, casting an article therein and then subjecting the article while in the sand mold to a blasting force sufficient to remove the sand from the molded article and also essentially destroy the bond which holds the sand particles together to thereby render the sand reusable in a subsequent mold forming operation.

3,738,416

METHOD OF MAKING DOUBLE-ORIENTED SINGLE CRYSTAL CASTINGS

Bernard H. Kear, Madison, Conn., and Larry W. Sink, Milwaukee, Oreg., assignors to United Aircraft Corporation, East Hartford, Conn.

Division of Ser. No. 806,869, March 13, 1969, Pat. No. 3,598,176. This application Feb. 1, 1971, Ser. No. 111,638
Int. Cl. B22d *27/06*
U.S. Cl. 164—60 3 Claims



A method by which to produce single crystal parts in which the orientation of the dendrite growth in two planes at right angles to one another is described. In effect this produces an orientation in all three right angle planes of the cast article.

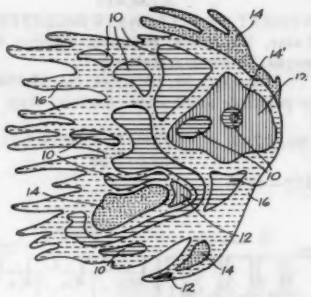
3,738,417

METAL ART FORMS AND METHOD FOR PRODUCING THE SAME

Norman D. Moore, 215 East 14th, Albany, Oreg.

Continuation of Ser. No. 816,534, April 16, 1969, abandoned. This application May 24, 1971, Ser. No. 146,469
Int. Cl. B22d *13/04*
U.S. Cl. 164—76 3 Claims

Molten metal is deposited on a movable plate in an inert atmosphere in a chamber and the plate is tilted, rotated and/or otherwise moved to distribute the molten metal to produce an art form. The metal is cooled sufficiently to solidify the art form and then various surface areas of the art form are subjected at selected elevated temperatures to chemical reaction with a selected reactive gas or mixture of gases to produce



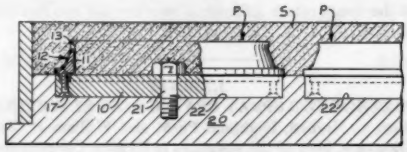
corresponding surface colorations in the various areas of the metal art form.

3,738,418

BACKDRAFT RUBBER SKIN MOLD PATTERN

George V. Harris, Racine, Wis., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed July 26, 1971, Ser. No. 166,201
Int. Cl. B22c *7/00*
U.S. Cl. 164—245 8 Claims



A composite metal and elastomer skin pattern for forming circular sand molds includes a circular metal sleeve which forms the basic mold portion and an elastomer skin or covering bonded thereto which includes the pattern's backdraft portion whereby the resulting pattern can be removed from a cured sand mold without damage thereto due to the elastic deformations of the pattern's surfaces and its elastomer backdraft portion.

3,738,419

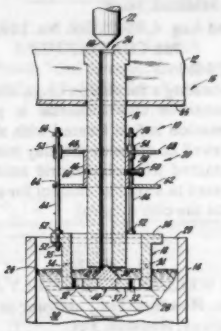
MOLTEN METAL LEVEL CONTROL FOR CONTINUOUS CASTING

George J. Hartmann, Clark, and Donald J. Nesslage, Old Bridge, both of N.J., assignors to Phelps Dodge Copper Products Corporation, New York, N.Y.

Filed Aug. 26, 1971, Ser. No. 175,128
Int. Cl. B22d *11/10*
U.S. Cl. 164—281 6 Claims

A molten metal level control includes a breakable tube for automatically feeding molten metal from a source to the mold, the tube having a first portion attached to the source and a second portion depending from the first portion. The control also includes float means mechanically coupled to said second tube portion for automatically controlling the rate at which the molten metal enters the mold from the breakable feed tube, and metering rod means positioned for coaction with said first portion of the breakable feed tube to provide unin-

terrupted regulation of the rate of flow of molten metal therethrough from the source and into the mold during emergencies when the second portion of the feed tube is broken from its first portion to eliminate automatic level control.



3,738,420

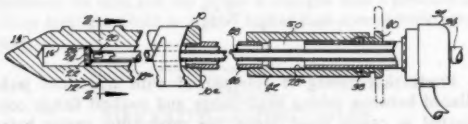
APPARATUS AND METHOD FOR CONTROLLING TEMPERATURE IN A FEED SCREW

Robert J. Poux, and Peter R. Deutsch, both of Titusville, Pa., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 784,007, Dec. 16, 1968, Pat. No. 3,588,956. This application Feb. 10, 1971, Ser. No. 114,362

Int. Cl. F28f 5/06

U.S. Cl. 165—1 **3 Claims**



A feed screw for advancing a thermoplastic resin has an interior bore through which a cooling medium is adapted to be circulated by conduits entering from an open entrance end of the bore. Adjustable means inserted into the bore forms a desired bore segment through which the cooling medium is freely circulated, thereby providing a desired temperature gradient along the screw length.

3,738,421

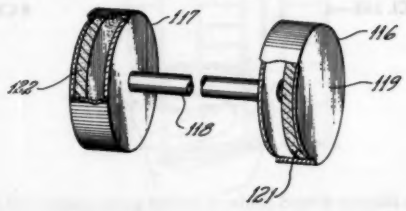
HEATRONIC CAPACITOR

Robert David Moore, Jr., 817 W. Camino Real, Arcadia, Calif.

Filed June 11, 1971, Ser. No. 152,185

Int. Cl. G05d 23/00

U.S. Cl. 165—32 **10 Claims**



A thermal analog of an electronic capacitor has a pair of substantially similar characters in vapor communication. Each chamber has a capillary material less than completely filled with a capacitance liquid. The liquid comprises a vaporizable heat transfer material and a substantially non-vaporizable solute with a relative broad solubility range. Vaporization of the heat transfer material from one chamber and condensation in the other serves to "charge" or "discharge" the heatronic capacitor. The vapor pressure differences due to differences in concentration in the heat transfer liquid permit the capacitor to hold a selected heat "charge" approximately proportional to the temperature differential across it, analogous to operation of an electronic capacitor.

3,738,422

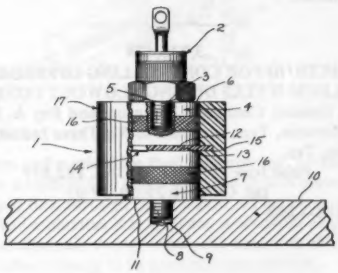
HEAT DISSIPATING INSULATING MOUNTING

George Economos, Shorewood; David E. Ford, Jr., Milwaukee, and John A. Fillar, Waukesha, all of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed May 4, 1971, Ser. No. 140,089

Int. Cl. H01l 1/12

U.S. Cl. 165—80 **2 Claims**



A mounting is shown for a heat generating electrical device, such as a power semiconductor, that functions to exchange heat between the heat generating device and a heat sink to which the mounting is attached. The mounting has a first metallic, heat conductive member upon which the semiconductor is supported, a second metallic, heat conductive member with means for attaching the mounting to a heat sink, a thin dielectric film sandwiched between and separating the two heat conductive members that exhibits good thermal conductivity, and an outer encapsulating jacket of resin that retains the assembly as a unitary whole.

3,738,423

GODET FOR DRAWING UNITS AND ROLLER DRYERS USED FOR TREATING MAN-MADE FIBERS

Heiniz Fleissner, Frankfurt am Main, Germany, assignor to Fleissner GmbH, Germany

Filed Mar. 8, 1971, Ser. No. 121,890

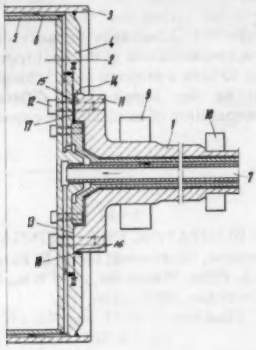
Claims priority, application Germany, Mar. 6, 1970, P 20 10 693.8

Int. Cl. F28f 5/02

U.S. Cl. 165—89 **7 Claims**

The present invention is directed to a godet for installation in drawing units and roller dryers used for treating natural and synthetic fibers, which comprises an outer and inner cylindrical jacket provided with a front wall, said outer and inner jacket defining a channel therebetween, means for introducing a forced flow of a heat transfer medium to the annular channel for heating the godet, and a bearing shaft means attached to the front wall of the godet by radial and axial fittings

and fixedly but rotatably mounted in bearing boxes associated therewith, the metal contact surfaces of the fitting areas



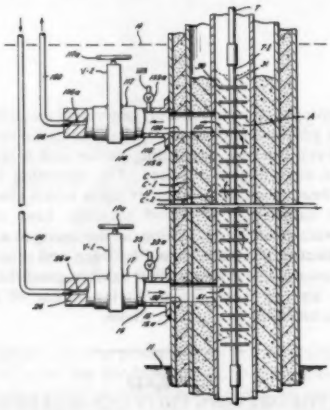
between the bearing shaft and the front wall of the godet being discontinuous.

3,738,424

METHOD FOR CONTROLLING OFFSHORE PETROLEUM WELLS DURING BLOWOUT CONDITIONS

Dean W. Osmun; Charles W. Johnson, and Ray A. Plummer, all of Houston, Tex., assignors to Big Three Industries, Inc., Houston, Tex.

Filed June 14, 1971, Ser. No. 152,517
Int. Cl. E21b *29/00, 33/03*
U.S. Cl. 166—298 **10 Claims**



Method for controlling petroleum wells, particularly those offshore, during blowout conditions, wherein special drill-through valves are externally mounted on a well casing at longitudinally spaced locations, and wherein openings are drilled or are otherwise formed through the wall of the casing at such valves to the area around or internally of the production tuning string so that various control operations may be performed, including for example, introducing liquid nitrogen and causing it to flow inwardly through one of said valves and out of the other of said valves for freezing a section of the petroleum, water and other material internally of the production string to form a temporary frozen plug which closes off fluid flow upwardly in the production string.

3,738,425

STABILIZATION OF WATER SENSITIVE CLAYS

James L. Thompson, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 4, 1971, Ser. No. 169,121
Int. Cl. E21b *33/13*
U.S. Cl. 166—305 R **7 Claims**

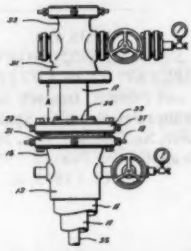
A method of treating a formation (e.g., subterranean), containing water sensitive clay minerals is provided. In this method, the formation is first treated with alcohol which will not appreciably swell or disperse the clay mineral. The formation is then contacted with phosphoric acid or phosphorous pentoxide, dispersed in a similar alcohol for a sufficient period of time to stabilize the clay mineral.

3,738,426

SUBSIDENCE WELLHEAD ASSEMBLY AND METHOD

Andre H. Drouin, Houston, Tex., assignor to Rockwell Manufacturing Company, Houston, Tex.

Filed Feb. 16, 1971, Ser. No. 115,561
Int. Cl. E21b *33/03*
U.S. Cl. 166—315 **12 Claims**



Production casing is retensioned with hydraulic jacks placed between tubing head flange and packoff flange connected to casing head flange, the production casing being screwed into tubing head and also supported in casing head by slip type casing hanger whose slips are spring biased downwardly. The packoff flange has a packing gland accessible from the top for seal replacement. The jacks are of the spring retract and fluid expand type adapted for actuation by a manual pump. A fluid pressure gage is calibrated to read in pounds of casing tension and is marked to show maximum permissible load on jacks.

3,738,427

HORSESHOEING

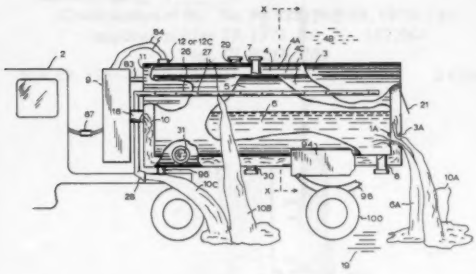
William A. Fryrear, Jr., 8820 St. Anthony Church Rd., Louisville, Ky., and Joseph R. Metcalf, 914 Flintlock Dr., Louisville, Ky.

Continuation-in-part of Ser. No. 869,616, Oct. 27, 1969, abandoned. This application Nov. 16, 1971, Ser. No. 199,252
Int. Cl. A01l *1/00*
U.S. Cl. 168—4 **8 Claims**

In the case of horses, particularly thoroughbreds, hoof care has not advanced along with careful breeding, scientific feeding and exercising, training methods and medical condition-

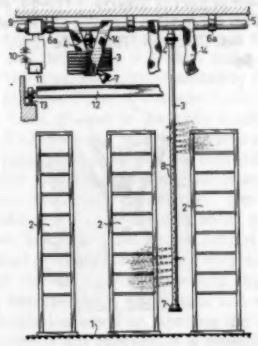
ing. A custom, and hence a perfectly fitting, horseshoe can be made. In addition the fit of conventional horseshoes can be improved, and injured portions of the sole can be protected.

3,738,428
SAFETY FUEL TANKS
Ben Ingro, 2437 North 73rd Avenue, Elmwood Park, Ill.
Filed Oct. 19, 1970, Ser. No. 81,691
Int. Cl. A62c *3/08*
U.S. Cl. 169—2 A **7 Claims**



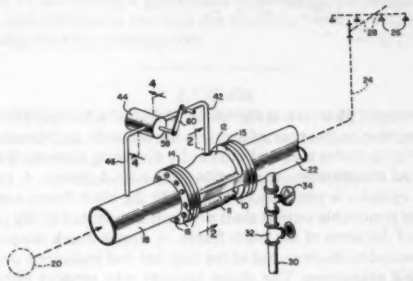
Safety system to prevent fire or explosion in fuel transporting tank trucks. The tank portion is surrounded by a pressurized system which when broken, as by impact, the altered pressure in the system automatically starts fire foam generating equipment to produce fire foam which is automatically dispensed in the immediate area of the tank. In a preferred form the pressurized system comprises a jacket which completely encompasses the fuel carrying tank, and the space between the tank and the jacket is charged with a pressure of air or inert gas which is slightly higher than atmospheric pressure.

3,738,429
FIRE EXTINGUISHING SYSTEM
Karl Heinz Heller, Northen, and Hans Joachim Fischer, Berenbostel, both of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany
Filed Mar. 4, 1971, Ser. No. 121,068
Claims priority, application Germany, Sept. 10, 1970, P 20 44 731.8
Int. Cl. A62c *3/00*
U.S. Cl. 169—2 R **7 Claims**



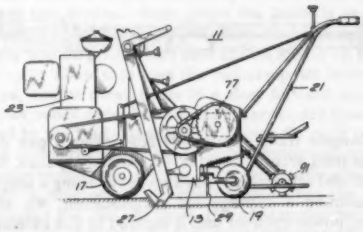
A fire extinguishing system in which branch conduit means branching off from main conduit means near the ceiling of a building, e.g., a warehouse, are in their ineffective position retracted and stored near the ceiling of the respective storage room or the like, and are released in case of fire in the vicinity thereof so as to freely hang downwardly to a plane near the floor of the building while control means normally preventing fluid connection between said main and branch-off conduit means establish such fluid connection.

3,738,430
SYSTEM AND METHOD OF FLUID FLOW CONTROL UTILIZING A DYNAMIC SHUTOFF VALVE
William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Boston-Providence Turnpike, Mass.
Division of Ser. No. 848,986, Aug. 11, 1969, Pat. No. 3,643,912. This application Sept. 14, 1971, Ser. No. 180,332
Int. Cl. A62c *35/00*
U.S. Cl. 169—13 **10 Claims**



A system and method for fluid flow control in which a valve located in a main supply conduit for the fluid is biased open to permit fluid flow through the conduit. An actuator moves the valve to and maintains it in a closed position in response to a continuous dynamic energy input, the cessation of which permits the valve to move to its normal open position.

3,738,431
SOD CUTTER CUTOFF BLADE MOUNTING
Robert A. Gennow, St. Paul, Minn., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Apr. 12, 1971, Ser. No. 133,039
Int. Cl. A01b *45/04*
U.S. Cl. 172—20 **7 Claims**



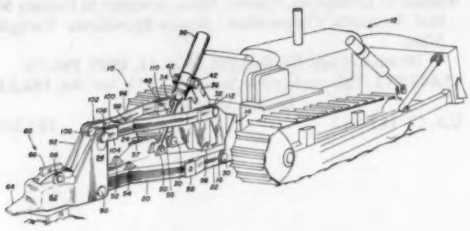
Disclosed herein is a sod cutter including a parallel linkage pivotally mounting a generally planar transverse cutoff blade on a frame such that the blade is movable into and out of the ground in response to travel of the cutter along the ground, such that the angular relation of the blade to the frame is constant during movement into and out of the ground, and such that the blade moves downwardly and rearwardly relative to the frame during movement of the blade into the ground, and such that the blade moves upwardly and forwardly relative to the frame during movement of the blade out of the ground.

3,738,432

RIPPER PLOW ASSEMBLY FOR CONVERTING PARALLEL LIFT TO RADIAL LIFT

Leon O. Kelley, P. O. Box 488, Stamford, Tex.

Filed May 24, 1971, Ser. No. 146,253
Int. Cl. A01b *13/08*
U.S. Cl. 172—248 20 Claims



A ripper plow assembly which includes a hitch frame for connection to the rear of a prime mover such as a tractor. A tool bar includes a pair of outwardly diverging arms each having end structure for connection to the hitch frame. A single fluid cylinder is pivotally connected to the hitch frame and includes a movable output shaft pivotally connected to the juncture of the arms of the hitch frame. A ripper shank support is connected to the rear end of the tool bar and includes a pair of upward extensions. The shank support may support either a single ripper shank or a plurality of ripper shanks arranged in a V-configuration. Two interconnected parallel linkage bars are connectable between the upper extensions of the shank support and the hitch frame to provide a parallelogram plow assembly. Alternatively, the linkage bars or a rigid plate may be connected between the upper extensions of the shank support and the tool bar to provide a radial plow assembly.

3,738,433

HYDRAULICALLY-MOTIVATED, ROPE-OPERATED FEED DEVICE FOR ROCK DRILLS AND THE LIKE

Paul C. O'Leary, Post Office Box 17314, Salt Lake City, Utah

Filed Apr. 5, 1971, Ser. No. 131,133
Int. Cl. E21c *5/06*
U.S. Cl. 173—147 3 Claims

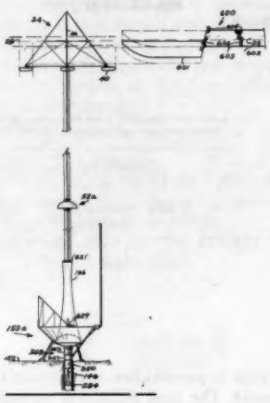
An elongate frame, preferably comprising a pair of structural channels secured together in mutually spaced, back-to-back, parallel relationship, has a trackway along a longitudinal face mounting a carriage for reciprocation. An elongate, hydraulic power cylinder unit is secured to and extends along one end portion of the frame and carries at its work stroke extension end tandem idler sheaves about which are looped respective ropes that extend to and from respective idler sheaves at opposite ends of the frame. One set of ends of such ropes are attached to opposite ends of the carriage, respectively, and the other set of ends are anchored to the frame adjacent opposite ends thereof, respectively. The cylinder of the power unit preferably has an easily removable cylinder head through which extends an elongate piston rod that carries the tandem sheaves externally of the cylinder and that is guided and supported by cooperative means secured to such rod and to the frame, respectively.

3,738,434

THE APPARATUS AND METHOD TO ESTABLISH AND SUSTAIN A SUBAQUEOUS STRATA DRILLING SYSTEM

Arthur John Nelson, 3304 Shasta Dr., San Mateo, Calif.

Filed Jan. 11, 1971, Ser. No. 105,434
Int. Cl. E21b *7/12*; E21c *19/00*
U.S. Cl. 175—6 7 Claims



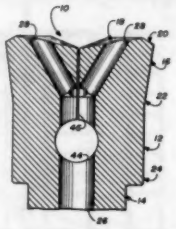
The attended drilling system comprises a vertical array of objects without the conventional conductor pipe extending from floor to surface of a body of water to encase the drill string. The principal contributing objects of the array considered in the present application comprises: a drilling station that is to be established upon the floor, a control station stably maintained at the surface and a support station adapted to function between as an elevator. These stations are transported to a site upon a barge adapted to the method of drydock handling of buoyant vessels. Means to sectionalize the drilling station to permit variations to its assembly and the relocation of the portable sections minimizes lost time. Adjusting, monitoring and control means are provided and constructed to function in a prolonged underwater environment.

3,738,435

VIBRATING PERCUSSION BIT

Charles L. Bronson, Dallas, Tex., assignor to Vorel Manufacturing Company, Dallas, Tex.

Continuation-in-part of Ser. No. 847,484, July 7, 1969, abandoned. This application July 29, 1971, Ser. No. 167,332
Int. Cl. E21b *5/00*; E21c *13/01*
U.S. Cl. 175—56 16 Claims



A percussion bit for hard rock formations includes a body having a keyhole shaped slot formed through it which causes the body to vibrate laterally as a tuning fork whenever the bit is impacted. Because of the vibration of the body, hardened inserts mounted in the body form a borehole not only by verti-

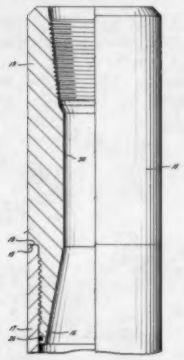
cal percussive engagement but also by lateral percussive engagement due to the tuning fork action of the bit and by scraping due to rotation of the bit in the borehole. Passageways extending through the body direct compressed air through the bit to remove drilling debris from the borehole.

3,738,436

MUD SAVER VALVE AND METHOD

Mason Rawleigh Litchfield, and Floyd Logan Scott, Jr., both of Houston, Tex., assignors to Smith International Inc., Midland, Tex.

Continuation of Ser. No. 58,525, July 29, 1970. This application May 28, 1971, Ser. No. 147,964
Int. Cl. E21b 7/00
U.S. Cl. 175—65 2 Claims



A mud saver valve assembly is connected between the lower end of the kelly and uppermost joint of drill pipe, the assembly including a downwardly opening spring loaded poppet valve and an upwardly opening ball check valve. The downstream face of the poppet is shielded from line pressure by a sealed air chamber at atmospheric pressure in such a manner that the resultant force of downstream pressure on the poppet tends to open the poppet.

Before adding another joint to the drill string the mud pump is shut down and the pressure gage checked to make sure there is no pressure in the drill string, any pressure in the drill string being transmitted through the ball check valve. If there is pressure it is bled off through a bleed off valve, if possible. With pressure down, the connection between the mud saver valve assembly and drill string is broken and a connection is made between the mud saver valve assembly and a joint of pipe in the mouse hole. No mud escapes from the kelly since the hydrostatic head of mud in the kelly is not sufficient to open the poppet valve in the mud saver valve assembly. The added joint of pipe is connected to the drill string still in the hole and the mud pump is turned on, automatically opening the poppet valve to restore circulation. The new joint is checked for leaks and if okay the drill string is lowered and drilling resumed. Since the downstream side of the poppet is shielded from mud pressure the pressure drop across the valve need not equal the spring force to hold the valve open, whereby pump horsepower is not wasted and whereby rapid valve erosion is eliminated. If on opening the bleeder valve, drill string pressure is not relieved, it is possible to close the blow out preventers and reverse circulate to kill the pressure in the formation, the poppet valve being full open under well pressure thereabove in the kelly transmitted by the ball check valve, the atmosphereic chamber below the poppet enabling the poppet to stay open when there is well pressure in the kelly sufficient to overcome the spring bias tending to close the poppet.

3,738,437

DRILLING PROCESS USING A SHALE PROTECTING POLYMER DRILLING FLUID SYSTEM

Ronald F. Scheuerman, Bellaire, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 50,990, June 29, 1970, abandoned, and a continuation-in-part of Ser. No. 50,991, June 29, 1970, abandoned. This application Feb. 28, 1972, Ser. No. 229,767
Int. Cl. E21b 21/04
U.S. Cl. 175—70 7 Claims

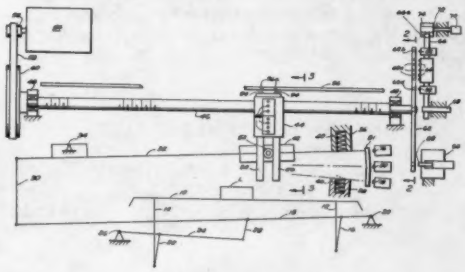
The cost of drilling a water sensitive shale is reduced by first enhancing drilling rate by circulating a clear drilling fluid, then avoiding borehole instability due to shale-water interaction by circulating an aqueous solution of partially hydrolyzed polyacrylamide and alkali metal halide, and avoiding borehole instability due to mechanical incompetence of earth formations by circulating a suspension of pre-hydrated bentonite in the said solution to enhance the borehole cleaning while continuing the shale stabilization.

3,738,438

DIGITAL READOUT SCALE WITH ACTUATED POISE

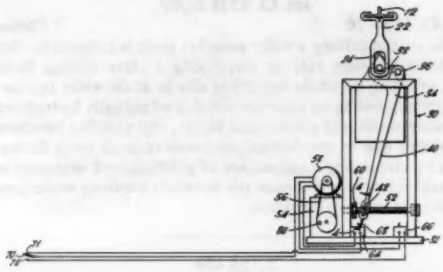
Edwin Ellner, Oxford, Conn., assignor to Better Packages, Inc., Shelton, Conn.

Filed June 28, 1972, Ser. No. 267,193
Int. Cl. G01g 23/22, 7/00
U.S. Cl. 177—25 11 Claims



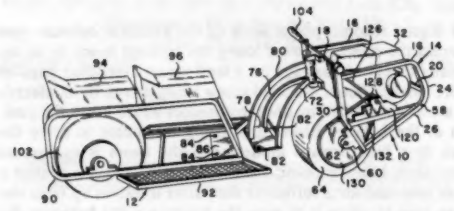
A digital readout postal scale of the platform balance type wherein the poise is moved along the balance beam by an internally threaded carriage on a lead screw extending parallel to the balance beam, the lead screw being driven by an electrical motor controlled by phototransistors which sense the position of the balance beam, energizing the motor to drive the poise in a fast forward mode when the beam is against an upper stop, in a fast reverse mode when the beam is against a lower stop and for a sufficient time after it moves up from the lower stop to allow it to pass the balance point between the two stops, and at other times in a slow forward mode, and wherein an ounce code disc bearing binary coded ounce holes is rotated by the lead screw one revolution for each pound of load, the ounce reading being made by phototransistors while the balance beam is still moving, this ounce reading being controlled by a phototransistor which senses when the balance beam reaches the balance point, this phototransistor also actuating a solenoid to stop the lead screw and controlling other phototransistors mounted on the carriage to sense binary coded pound and postage holes spaced, at intervals corresponding to one pound of load, lengthwise of pound and postage code members extending parallel to the lead screw. The postage code member may be in the form of a roll which is supported on rollers on a removable plate, the rollers being driven by an electrical motor controlled by phototransistors which sense binary coded rate group identifying holes in the roll to stop the motor when the group of rate code holes representing the postage rates for the desired combination of mode of shipment and distance zone, which has been selected by pushbutton switches, has reached the read position.

3,738,439
SCALE TESTER
Arthur J. Herbert, 45, 45th Avenue, Edmundston, New Brunswick, Canada
Filed Mar. 8, 1972, Ser. No. 232,875
Claims priority, application Canada, Jan. 6, 1972, 131,821
Int. Cl. G01g 19/52
U.S. Cl. 177—50 9 Claims



A platform scale is provided with a scale testing mechanism of the dead-weight type for determining the accuracy of the scale. The testing mechanism comprises a plurality of hangers fixed to the underside of the scale platform, a calibrated weight suspended from the hangers, and a lifting mechanism comprising a plurality of bell crank lever driven by jack screws in response to actuation of a reversible electric motor selectively to raise the calibrated weight out of supported engagement with the hangers or to lower the calibrated weight into engagement with the hangers.

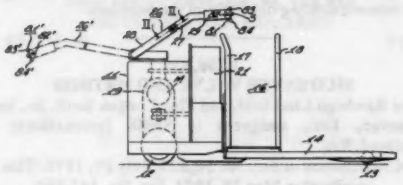
3,738,440
ONE WHEELED FRONT DRIVE UNIT
Nelson Storm, 213 Perry, Rossville, Ill.
Filed Jan. 19, 1972, Ser. No. 218,904
Int. Cl. B62m 7/10
U.S. Cl. 180—13 4 Claims



A one wheeled front drive unit adapted to pull a vehicle component removably attached thereto wherein the front drive unit includes a frame assembly pivotally mounting a motor driving a pinion drivably connected to a sprocket affixed to a wheel rotatably carried by said frame assembly. Support means are pivotally connected to the frame assembly through a bearing assembly and are provided with coupling means for removably attaching a vehicle component thereto.

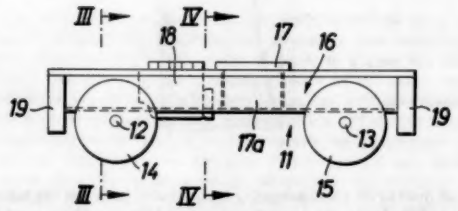
3,738,441
SWIVEL CONTROL HANDLE FOR LIFT TRUCK
Mark H. Kemner, Park Forest, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Mar. 6, 1972, Ser. No. 231,885
Int. Cl. B62d 51/00
U.S. Cl. 180—19 H 8 Claims

The control handle of a walkie type lift truck has an elbow part and a base part which are relatively pivotable about a longitudinal axis so as to facilitate operation of the lift truck by the operator when riding the truck. In pivoting the control



handle a switch is operated to effect an inversion of the forward-reverse controls and to bypass a safety reversing switch.

3,738,442
VEHICLE CHASSIS FRAME
Peter Eiler, Langenfeld, Germany, assignor to Leo Gottwald K.G., Dusseldorf, Germany
Filed Mar. 9, 1971, Ser. No. 122,423
Claims priority, application Germany, Mar. 11, 1970, P 20 11 410.7
Int. Cl. B60k 5/12
U.S. Cl. 180—64 R 6 Claims

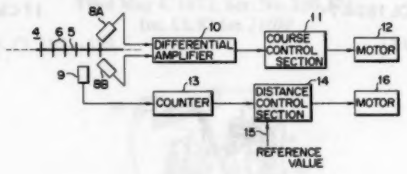


A chassis frame for a vehicle, such as a truck crane, is formed of a pair of longitudinally extending, laterally spaced z-shaped support members. Each support member has a vertically arranged web with a lower flange extending inwardly toward the other support member and an upper flange of greater width than the lower flange extending outwardly from the web. The lower flange extends generally perpendicularly to the web while the upper flange is composed of a first portion extending angularly upwardly and outwardly to a second portion which extends outwardly normal to the web and a third portion which forms the outer longitudinal edge of the upper flange and extends angularly downwardly from the outer end of the second portion. Vertical plates are secured to the inside of the web and are supported at their lower ends on the lower flange, these plates act as supports for members mounted on the chassis frame. With this chassis frame the drive motor of the vehicle can be supported on the lower flanges between the web of the support members.

3,738,443
CONTROL SYSTEM FOR THE TRAVEL OF A GOODS TROLLEY
Moritada Kubo, 35-19-Ohyama-cho, Shibuya-ku, Tokyo, Japan
Filed Nov. 25, 1970, Ser. No. 92,800
Claims priority, application Japan, Nov. 28, 1969, 44/95028; Nov. 28, 1969, 44/112472
Int. Cl. B60k 27/06
U.S. Cl. 180—98 10 Claims

A control system for controlling the travel of a goods trolley comprising a first detector for control of the travelling

distance of the trolley and second and third paired detectors for control of the course of the trolley, all said detectors being mounted on the trolley and a detected member located along the trolley course for generating both analog and digital control indicia so as to cause the first detector to give a digital quantity and the second and third detectors to give an analog



quantity, wherein the output from the first detector is calculated by a counter, the output from said counter is compared with a reference value for control of the distance to be covered by the trolley, and outputs from the second and third detectors are conducted to a differential amplifier, the trolley course being controlled until output from the differential amplifier attains a prescribed value.

3,738,444

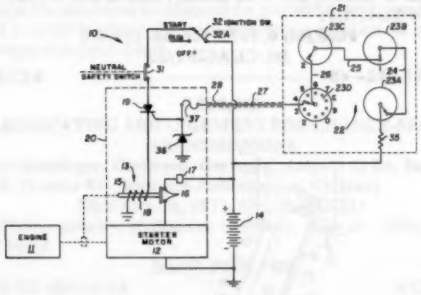
ANTI-THEFT SYSTEM FOR A VEHICLE

John Roby, 124 St. John's Avenue, Yonkers, N.Y.

Continuation-in-part of Ser. No. 113,369, Feb. 8, 1971, abandoned. This application July 12, 1971, Ser. No. 161,558

Int. Cl. B60r *25/00*

U.S. Cl. 180—114 **7 Claims**



An anti-theft system for an automotive vehicle whereby the starter motor is energized through an electronic switch only when a command signal is applied thereto by setting a series of code switches into the proper switching states to establish a predetermined code state.

3,738,445

SEISMOMETER SPRING SUSPENSION SYSTEM

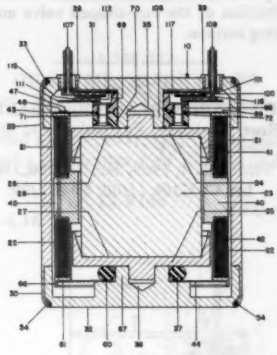
Ernest Wilson, 10031 Larston, Houston, Tex., and Allen H. Mueller, 304 W. 31st St., Houston, Tex.

Filed Sept. 7, 1971, Ser. No. 178,030

Int. Cl. G01v *13/00*

U.S. Cl. 181—0.5 R **9 Claims**

A spring suspension system for a seismometer for suspending one body relative to the second body including three resilient leaf cantilever springs each including two adjacently positioned leaf arc segments extending approximately 120° with the second ends of adjacent segments connected together and the first ends of adjacent segments being connected respectively to the first and second bodies. An inner ring connected to the inner segments and an outer ring connected to



the outer segments with the inner and outer rings including portions electrically insulated from each other to provide two separate electrical conducting paths. A spiral electrical conducting spring connected to each separate electrical path, one end of which is fixed and the second end limiting rotational movement of the leaf spring.

3,738,446

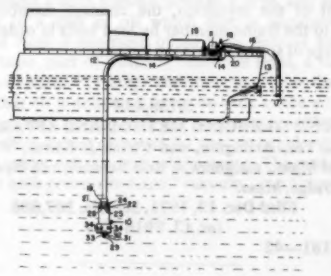
UNDERWATER SIREN

Ralph B. Nottingham, 8935 Meridian St., Cleveland, Ohio

Filed July 4, 1945, Ser. No. 603,250

Int. Cl. G10k *7/00*

U.S. Cl. 181—0.5 AG **3 Claims**



In an underwater siren of the character disclosed, the combination of a cylindrical member having a closed end portion and a plurality of ports radially arranged therein, means for supplying hydrostatic pressure to the interior of said cylindrical member, a cup-shaped valve member encircling an end portion of said cylindrical member and having a plurality of apertures adapted to be brought into registered engagement with said ports respectively as the cup-shaped member rotates thereby to interrupt the flow of water through the ports momentarily and repeatedly, means including a flat bearing surface for supporting said cup-shaped valve member for rotation on said cylindrical member with the bottom thereof in closely

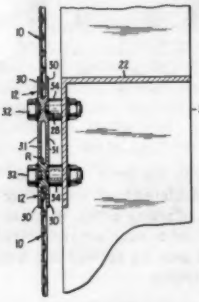
spaced adjacency with respect to said closed end portion, means responsive to the flow of water through said ports for causing the cup-shaped member to rotate, and means including an annular recess of substantially the same diameter as the outside diameter of said cylindrical member formed in the bottom of said cup-shaped valve member and a plurality of vents in communication therewith for relieving the water pressure between the bottom of said cup-shaped member and said closed end portion of the cylindrical member thereby to reduce the friction of the cup-shaped valve member against said flat bearing surface.

3,738,447

FREE-STANDING LEAD SOUND BARRIERS

Michael V. Rose, Sewickley, Pa., assignor to St. Joseph Lead Company, New York, N.Y.

Filed Feb. 4, 1969, Ser. No. 796,376
Int. Cl. G10k *11/00*; E04b *1/99*
U.S. Cl. 181—33.1 **12 Claims**



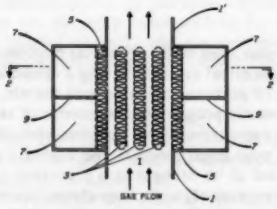
A barrier for attenuating sound in accordance with this invention comprises a rigid frame member having a plurality of channel members, which may be made of dispersion strengthened lead, mounted on it to form a plurality of subframes. Sheets of free-standing, dispersion strengthened, creep-resistant lead are carried in the subframes by the channel members and may be embossed to add to their rigidity. One face of the sheets may be roughened in order to disperse reflected sound waves. According to another preferred embodiment of the invention, the channel members may be secured to the frame member by lead bolts in order to reduce the leakage of sound across the barrier.

3,738,448

SOUND SILENCING METHOD AND APPARATUS

Istvan L. Ver, Arlington, and Ulrich J. Kurze, W. Roxbury, both of Mass., assignors to Bolt Beranek and Newman, Inc., Cambridge, Mass.

Filed Dec. 13, 1971, Ser. No. 207,008
Int. Cl. F01n *1/04*
U.S. Cl. 181—42 **6 Claims**



This disclosure deals with a novel sound muffler for gas turbine engines and the like employing in the same duct section both longitudinal baffles and outwardly transversely extending side-branch cavities.

3,738,449

SAFETY DESCENT APPARATUS

James A. Arancio, Bayside, New York, N.Y.

Continuation-in-part of Ser. No. 830,003, June 3, 1969, abandoned. This application Aug. 11, 1970, Ser. No. 62,981
Int. Cl. A62b *1/16*
U.S. Cl. 182—7 **17 Claims**

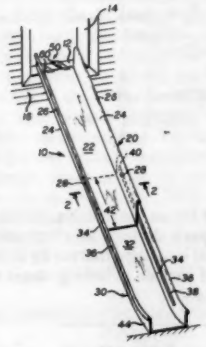
A harness is detachably supported inside a coat, and can be detachably fastened loosely around the wearer's waist and buttocks, so that the wearer can move around when the apparatus is not in use. A hook at one end of a rope is anchored around any substantial object, and the hook snapped onto the rope. The loose end of the rope is then thrown out of a window. The user wraps the rope three or four times around a hook on the harness and lets himself out of the window, supported by the anchored rope. To stop, the rope is pulled. To descend, the rope is fed up.

3,738,450

PORTABLE EXTENSIBLE FIRE ESCAPE SLIDE

Harold A. Hessler, and Alice Hessler, both of 875 W. 181 St., New York, N.Y.

Filed July 6, 1971, Ser. No. 159,976
Int. Cl. A62b *1/20*
U.S. Cl. 182—48 **4 Claims**



A portable fire escape comprising a plurality of generally U-shaped chute members, the outside edges of one turned outwardly over the corresponding turned edges of the next, to provide a slidably interlocked, telescopically extensible system, with stops to limit the sliding of one chute member relative to its adjacent counterpart. The upper entrance end of

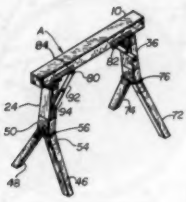
the fire escape chute is pivotally connected to at least one clamping support strap for anchoring the chute to the escape window sill, with means provided for maintaining a suitable angle between the chute and the vertical wall of the building to be evacuated.

3,738,451

PORTABLE WORK SUPPORT ASSEMBLY

James R. Kirkpatrick, 609 Horn, Lemay, Mo.

Filed May 4, 1972, Ser. No. 250,376
Int. Cl. F16m 11/00
U.S. Cl. 182—155 13 Claims



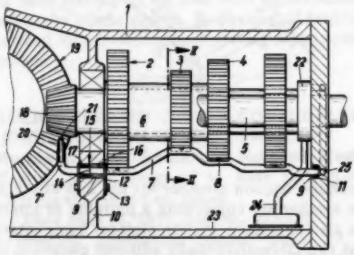
A portable collapsible saw horse comprising an elongated support beam having a pair of leg members, each being hingedly attached to the support beam proximate each of the transverse ends thereof. The leg members are swingable from a closed position where they lie parallel to and in juxtaposition to the support beam to an open position where they extend downwardly from and are angularly located with respect to the support beam. A pair of leg elements are hingedly connected to each of the leg members. These leg elements are also shiftable from a closed position where they lie in juxtaposition to each other and are coplaner with the leg member with which they are associated to an open position where they are angularly located with respect to each other and extend outwardly from the respective leg member with which they are associated. In this way, the legs can be folded in a manner where the saw horse is collapsed for portability and opened for use in receiving work pieces in supportive engagement on the elongated support beam.

3,738,452

LUBRICATING ARRANGEMENT FOR CHANGE-SPEED TRANSMISSIONS

Otto Hausinger, Gerlingen, Germany, assignor to Dr. Ing h.c. F. Porsche KG, Stuttgart-Zuffenhausen, Germany

Filed Aug. 26, 1971, Ser. No. 175,211
Claims priority, application Germany, Aug. 26, 1970, P 20 42 206.4
Int. Cl. F01m 1/08
U.S. Cl. 184—6.12 6 Claims



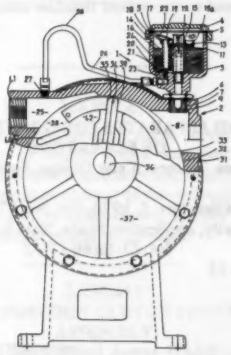
A lubricating system for change-speed transmissions, especially of vehicles with spray nozzles connected with a pressure line system for the gears supported in the transmission housing and the bearing places thereof, whereby one or several pipe lines are used that are installed freely along the pairs of gears between cross walls of the transmission housing and nozzle-like discharge apertures are provided in the pipe lines for each of the gear pairs which are directed against the tooth area in front of the point of tooth engagement.

3,738,453

OILING MEANS FOR PUMPS

Gordon Henry Boswell, 7, The Anchorage, Pakuranga, Auckland

Filed Apr. 21, 1971, Ser. No. 135,890
Claims priority, application New Zealand, Apr. 23, 1970, 159934
Int. Cl. F16n 7/12
U.S. Cl. 184—6.16 6 Claims



An oiler for a pump having a delivery side and an inlet side, the delivery side being at a higher pressure than the inlet side, the oiler having a wick passing through a tube, one end of the wick lying in a dish of oil which dish is constantly being replenished from a reservoir of oil by a flow of air passing through a tube, part of which is below oil level, a flow of air passing downwardly through the tube in which the wick is placed so that oil is delivered from the wick to the air and into the fuel pipe of a pump, with the air pressure differential to create the flow being obtained by the air supply pipe being connected to the delivery side of the pump. The pump may be used under both pressurized and "vacuum" conditions.

3,738,454

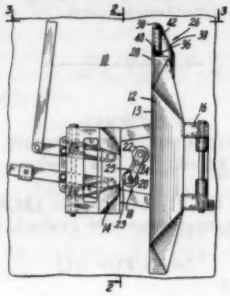
JAM PROOF DOOR CLUTCH

Richard E. Atkey, Memphis, Tenn., assignor to Dover Corporation, Memphis, Tenn.

Filed July 12, 1971, Ser. No. 161,663
Int. Cl. B66b 13/00
U.S. Cl. 187—51 9 Claims

A vertically extending leaf is pivotally mounted on the end of a hoistway door operating clutch vane and spring biased to lie in the plane of the operating face of the vane. The spring exerts a force on the leaf sufficiently strong to unlock the unlocking roller of a conventional hoistway door operating

mechanism, but will yield to allow the leaf to pivot when it engages only the locked opening roller, thereby permitting the



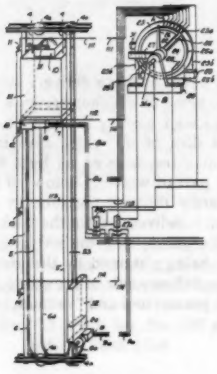
clutch mechanism to pass and the car door to open when the car is misaligned to the extent that the unlocking roller is not engaged.

3,738,455

METHOD AND APPARATUS FOR GRAVITY-ACTUATION OF ELEVATORS

Alfonso Boguna Tintore, Calle Obispo Sinilla, 50, Barcelona, Spain

Filed Nov. 5, 1970, Ser. No. 87,173
Claims priority, application Spain, Nov. 6, 1969, 373556
Int. Cl. B66b *17/12*
U.S. Cl. 187—15 **10 Claims**



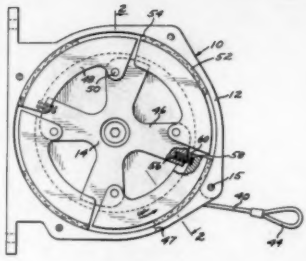
A method and apparatus for operating elevators. The elevator is operated exclusively with gravitational forces. Accelerating and decelerating movements of the elevator are brought about by conversion of potential into kinetic energy and kinetic into potential energy in a controlled manner. The elevator and a counterweight are suspended from a cable and pulley assembly. At locations primarily beneath the elevator and counterweight, there are masses carried by the elevator and counterweight and transferred between the elevator and counterweight to bring about the application of the gravitational forces which will accelerate and decelerate the elevator as required.

3,738,456

SPEED SENSITIVE SELF-ENERGIZING BRAKE

George K. Russell, Castle Rock; Ronald L. Criley, Evergreen, and Richard H. Frost, Littleton, all of Colo., assignors to Frost Engineering Development Corporation, Englewood, Colo.

Filed Jan. 5, 1970, Ser. No. 744
Int. Cl. F16d *59/00*
U.S. Cl. 188—184 **15 Claims**



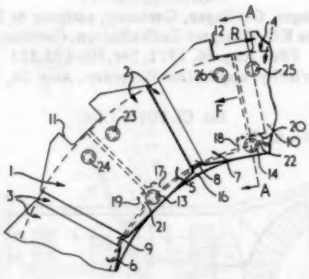
This invention relates to a self-energizing brake which is not more than from 50 to 80 percent self-energization actuated and not less than 20 percent otherwise actuated. One or more brake shoes is pivotally attached to a rotating member for movement against a stationary brake drum under the influence of centrifugal force and self-actuation.

3,738,457

FRICTION MECHANISMS

Frederick Sidney Dowell, Coventry, England, assignor to The Dunlop Company Limited, Erdington, Birmingham, England

Filed Jan. 8, 1971, Ser. No. 104,987
Claims priority, application Great Britain, Jan. 14, 1970, 1,759/70
Int. Cl. F16d *65/10*
U.S. Cl. 188—218 XL **4 Claims**



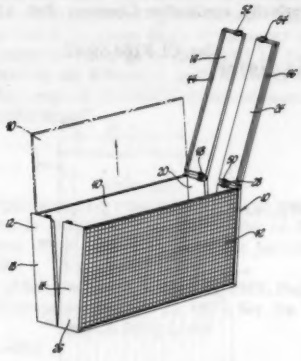
An annular friction member for use in a disc brake or like friction mechanism comprising a plurality of interconnected friction elements, each friction element being interconnected with the two circumferentially adjacent elements, operatively associated with a rotatable or non-rotatable portion of the disc brake or like friction mechanism and also secured to a retaining ring arranged to extend adjacent one of the peripheries of the elements, of which the following is a specification.

3,738,458

CARRYING CASE WITH REMOVABLE SIDE PANELS

Henry H. Yount, 4636 Bantry Drive, Orchard Lake, Mich.

Filed July 14, 1971, Ser. No. 162,463
Int. Cl. A45c *13/00*
U.S. Cl. 190—49 5 Claims



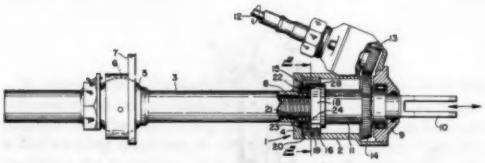
A carrying case comprising two hinged shell portions each comprising a perimeter frame and a structural side panel carried within a slot extending around the inside surface of the frame. Each frame is segmented such that the side panels may be removed from the frames and replaced or reversed to change appearance.

3,738,459

DEVICE FOR CONTROLLED LOWERING OF MASS LOAD

Howard M. Geyer, Dayton, Ohio, assignor to Pneumo Dynamics Corporation, Cleveland, Ohio

Filed Apr. 26, 1971, Ser. No. 137,228
Int. Cl. F16d *87/10*
U.S. Cl. 192—8 R 10 Claims



Device consists of a linear actuator having a direction sensitive clutch engageable with a load-energized friction bearing surface during movement in the load-aiding direction for eliminating back driving by the load with no decrease in the forward efficiency of the device. Bi-directional braking may also be provided for preventing back driving of the actuator in either direction.

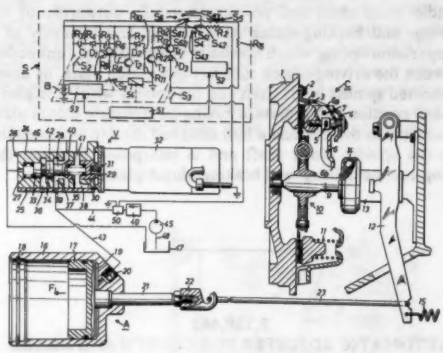
3,738,460

HYDRAULIC RELEASED CLUTCH CONTROLLED BY ENGINE SPEED AND SHIFT SWITCHES

Noboru Murakami; Koji Nishida, and Nobuyuki Hashimoto, all of Kariya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed June 15, 1971, Ser. No. 153,175
Claims priority, application Japan, June 17, 1970, 45/52618; June 17, 1970, 45/52619; June 17, 1970, 44/52620
Int. Cl. F16d *67/00*
U.S. Cl. 192—3.58 5 Claims

Disclosed herein is an automatic control system of a friction disc clutch for vehicles, which comprises a source of fluid pressure, hydraulic servo means for disengaging the clutch, solenoid operated regulating valve means for controlling fluid pressure supplied to the servo means from the pressure source, an electronic control system for regulating the valve means in response to the rotation speed of the vehicle engine, and means for expediting discharge of fluid pressure from the servo means after completion of drive power train shifting operation thereby to realize quick and smooth clutching operation. As engine speed increases above idling, the control system gradually reduces current to the solenoid valve so that it gradually opens a servo exhaust port thereby permitting the clutch to be gradually engaged by springs.

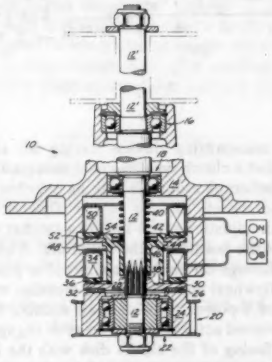


3,738,461

NEUTRAL POSITION CLUTCH FOR SPINDLE ASSEMBLY

Frank E. Brooks, Seneca, and James Waddington, Clemson, both of S.C., assignors to Maremont Corporation, Chicago, Ill.

Filed June 2, 1971, Ser. No. 149,146
Int. Cl. F16d *67/02*
U.S. Cl. 192—18 B 5 Claims



In a spindle assembly employable with textile machines, such as twisters and the like, which contains an electromagnetically actuable driving- and braking-clutch subassembly, there is disclosed an electromagnetic neutral position clutch

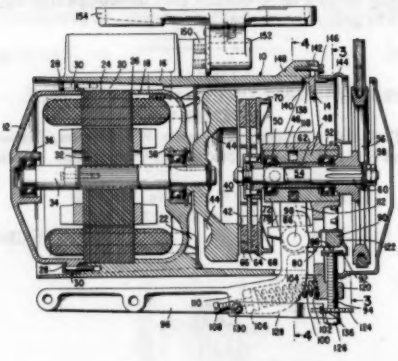
subassembly cooperating therewith, which latter upon actuation disengages the spindle blade shaft from its driven cooperation with a drive means and its whirl and also from the electromagnetic driving- and braking-clutch subassembly, so that the spindle blade and yarn package thereon are freely rotatable for purposes of easily withdrawing a length of yarn from the package for threading up. The neutral position electromagnetically actuable clutch sub-assembly generally comprises an axially adjustable electromagnetic coil encircling the spindle blade shaft and positioned axially outwardly of the driving- and braking-clutch subassembly and inwardly of a compression spring which normally biases driving connection between the driving-clutch subassembly clutch plate, its interconnected spindle blade shaft and the driving whirl, and also a neutral position hub armature having an armature clutch plate attractable to the coil and a hub attached thereto which encircles the spindle blade shaft and is interposed between the spring and the driving- and braking-clutch plate.

3,738,462

AUTOMATIC ADJUSTER FOR CLUTCH AND BRAKE

Joseph C. Hage, New Shrewsbury, N.J., assignor to The Singer Company, New York, N.Y.

Filed May 26, 1972, Ser. No. 257,293
Int. Cl. F16d 67/02
U.S. Cl. 192—18 R **12 Claims**



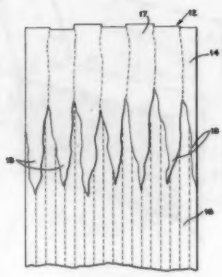
A power transmitting device having an electric motor driven shaft and a clutch type flywheel mounted on one end of the shaft. A bellcrank mounted braking member is located opposite to the clutch surface of the flywheel and spaced therefrom. An adjusting screw having a ratchet wheel secured thereto varies the position of the bellcrank. A clutch disk having friction facings on each side thereof is positioned intermediate the flywheel and the braking member and is mounted on one end of a power take-off shaft slidable by means of a pivotably mounted actuating lever so as to engage selectively a first friction facing of the clutch disk with the flywheel or to engage the second friction facing of the disk with the braking member. A pawl member is secured to the actuating lever and when the actuating lever is pivoted the pawl can turn the ratchet wheel to move the braking member toward the flywheel when wear on the friction facings has caused the clearance between the flywheel and the clutch to exceed a preselected amount proportional to the pitch of the ratchet wheel teeth.

3,738,463

BRAKE OR CLUTCH LINING

Helmut Kunst, Osterholz-Scharmbeck, and Heinrich Wasels, Altena, both of Germany, assignors to Institute fur Harterei-Teehnik, Lesumer and Heinrich Wasels, Altena (Westphalia) Klusenstrasse, Germany

Filed Mar. 11, 1971, Ser. No. 123,222
Claims priority, application Germany, Feb. 13, 1970, P 20 06 540.1
Int. Cl. F16d 69/02
U.S. Cl. 192—107 M **4 Claims**



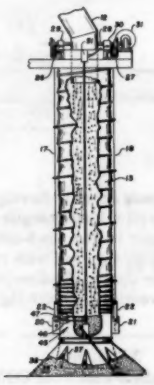
The present invention relates to brakes or clutches having the frictional surfaces thereof boronized on one or both of the braking or clutching surfaces.

3,738,464

DROP BOOT TO PREVENT WIND LOSS OF FINELY DIVIDED FLUENT MATERIALS

Earl W. Ortlip, 5132 Holiday Road, Hopkins, and Wallace M. Smith, 6107 Valewood Drive, Minnetonka, both of Minn.

Filed May 17, 1972, Ser. No. 254,050
Int. Cl. B65g 65/28
U.S. Cl. 193—25 **7 Claims**



An apparatus for controlling the delivery of particulate solids onto a surface exposed to atmosphere for avoiding wind loss, and including a closed elongated flexible conduit means having a discharge opening at the bottom thereof, and means for controlling the lateral and elevational disposition of the discharge opening. A downwardly flared flexible boot is secured to the base of the conduit and is arranged to enclose the material being delivered onto the exposed surface in an

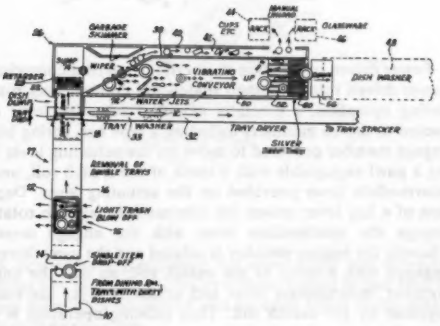
enclosed column of material, with the perimeter of the boot and the accumulated solid column forming a seal between the atmosphere and the interior of the flexible conduit. The column of material which is accumulated within the boot is arranged to rise to a level determined by a sensing detector, and will normally remain at a level below a certain predetermined upper limit. Means are provided for intermittently elevating the conduit and the flared boot in a series of short upwardly directed strokes, with the elevating events continuing until the column drops below its upper limit, these upper and lower level limits normally being generally equal to the vertical distance defined by the difference in the extreme flare angle and relaxed flare angle of the boot so as to continuously maintain the atmospheric seal.

3,738,465

VIBRATING SORTER FOR SOILED TABLEWARE

Ralph Ettlinger, Jr., Highland Park, and Walter M. Schneider, Chicago, both of Ill., assignors to Avant Industries Inc., Wheeling, Ill.

Division of Ser. No. 828,510, May 28, 1969, Pat. No. 3,605,767. This application Apr. 13, 1971, Ser. No. 133,667
Int. Cl. B65g *11/20*
U.S. Cl. 193—43 B 3 Claims



A construction for handling soiled tableware so that the tableware can be automatically sorted prior to placement into holders used for supporting the tableware as it passes through a dishwashing machine. A vibrating conveyor is provided for receiving the tableware, and a barrier extends across the conveyor bed to separate flatware comprising plates and silverware from pieces of greater height such as cups and glasses. The separated tableware is delivered along separate paths to the end of the vibrating bed for placement in appropriate racks or other dishwashing equipment holding means. The flatware is divided by providing slots in a corrugated section of the bed so that the silverware is collected apart from plates. Means are also provided for separating soiled dishes from cafeteria trays where the dishes are initially delivered on such trays.

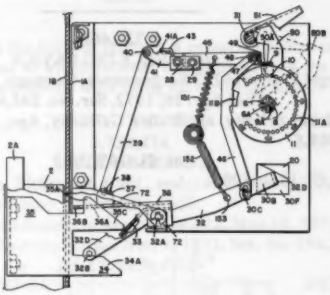
3,738,466

COIN MECHANISM FOR VENDING MACHINES

Karl Knickerbocker, 400 Baycrest Drive, Venice, Fla.

Filed Apr. 16, 1971, Ser. No. 134,686
Int. Cl. G07f *5/00*
U.S. Cl. 194—18 4 Claims

The coin mechanism of this invention is in reality a type of adding machine. Nickels, dimes and quarters inserted into the mechanism enter into and pass through their respective coin chutes, as the coins travel through the chutes they actuate crank plates and linkage, that in turn cause a circular spaced ratchet plate that is rotatably mounted on the coin mechanism base plate to rotate in a limited manner, each ratchet tooth of the ratchet plate represents one nickel. When a nickel is inserted into the coin mechanism, the ratchet plate is rotated a distance of one ratchet tooth. When a dime is inserted into the coin mechanism the ratchet plate is rotated two ratchet teeth. When a quarter is inserted into the coin mechanism, the ratchet plate is rotated five ratchet teeth, each time the ratchet plate is rotated, it is locked in the furthermost rotated position by a stationary ratchet pawl. Thus, if one nickel, one dime and one quarter are inserted progressively into the coin mechanism the ratchet plate will be rotated eight ratchet teeth past the normal position, representing a coin value of forty cents. A circular price setter plate is located adjacent to the



ratchet plate on the opposite side of the coin mechanism base plate, the price setter plate is rotatably mounted on the ratchet plate shaft that extends through the base plate, in a manner that it can be set to accommodate any one of the coin mechanism's selling prices. The price setter plate has holes pierced through the plate on a slightly smaller radius than that of the outside radius of the ratchet plate to correspond to the number and spacing of the ratchet teeth of the ratchet plate, these holes provide means for setting the plate to accommodate the various price requirements. An opening cut inwardly from the outside of the price setter plate provides means for releasing the door or other locking elements of a vending machine, when the proper amount of coins are inserted into the coin mechanism, the price setter plate can be preset in increments of one nickel to trigger the release of the door or other locking components of a vending machine at any figure from five cents to one dollar and fifty cents.

3,738,467

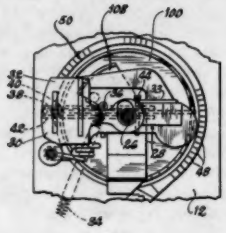
TIME PURCHASE WINDING MEANS FOR PARKING METERS

Bruno Zajac, 4736 North Newland Avenue, Arlington Heights, Ill., and Rinaldo Sciacero, 1115 East Rockwell, Arlington Heights, Ill.

Filed Dec. 13, 1971, Ser. No. 207,355
Int. Cl. G07c *1/30*
U.S. Cl. 194.72 18 Claims

A meter construction wherein purchased time is obtained through engagement of pawl means with a winding means attached to a timing mechanism, the pawl means being moved into engaging position by a coin employed for purchasing time. The improvement involves the use of an auxiliary winding arm operatively connected to the winding means. A winding disc is directly tied to the winding means whereby driving engagement of the winding arm with the disc will result in the

purchase of time. The winding disc defines teeth which are moved into position after the initial purchase of time so that



the subsequent insertion of a coin results in engagement of the pawl directly with the disc for purchase of additional time.

3,738,468

COIN CHECKING DEVICE

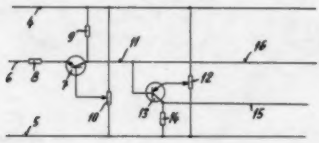
Margot Prumm, 5283 Bergneustadt, Germany

Filed Apr. 20, 1972, Ser. No. 245,976

Claims priority, application Germany, Apr. 28, 1971, P 21 20 869.5

Int. Cl. G07f 3/02

U.S. Cl. 194—100 A **10 Claims**



An electronic coin checking device comprising at least one window circuit for checking coin-characteristic measurement signal values caused by the movement of coins past a measuring location, wherein the window circuit arrangement possesses two window boundary circuits delimiting a window region, at least one of which window boundary circuit is constructed as an amplifier in such a manner that a portion of a measurement signal value penetrating into the window region is amplified.

3,738,469

TESTER FOR DIFFERENT TYPES OF COINS

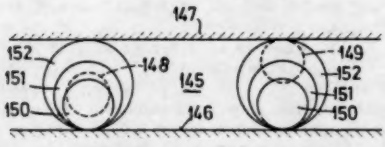
Georg Prumm, D-5282 Bergneustadt, Germany

Filed Aug. 17, 1970, Ser. No. 64,157

Claims priority, application Germany, Aug. 22, 1969, P 19 42 822.9; Sept. 18, 1969, P 19 47 238.9

Int. Cl. G07f 3/02

U.S. Cl. 194—101 **7 Claims**



A method and apparatus for checking coins during their travel along at least one coin channel of a coin checking device is disclosed which contemplates subjecting each coin to a damping measurement to obtain a first type of information about the coin, and also subjecting the coin to at least a second measuring operation to obtain a second type of information about the coin being checked. The invention further teaches the possibility of performing a still further damping measurement to obtain additional information about the coin different from said first type of information.

3,738,470

POWER DRIVEN TYPE ACTION IN ELECTRIC TYPEWRITER

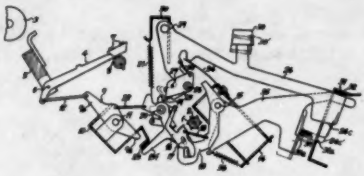
Takatoshi Osaka, Tokyo, Japan, assignor to Citizen Watch Company Limited, Shinjukuku, Tokyo, Japan

Filed June 23, 1971, Ser. No. 155,884

Claims priority, application Japan, July 2, 1970, 45/57863

Int. Cl. B41j 23/08

U.S. Cl. 197—17 **4 Claims**



Power driven type action in electric typewriter comprising a power driven rotary toothed snatch roll continuously rotated during operation, a pivotally mounted actuating lever connected to driven members including a type bar, spring biased engage member provided to move on the actuating lever having a pawl engageable with a tooth of the snatch roll, and an intermediate lever provided on the actuating lever. Depression of a key lever causes the intermediate lever to rotate to engage the intermediate lever with the engage member. Thereby the engage member is rotated and the pawl thereof is engaged with a tooth of the snatch roll, so that the engage member, intermediate lever and actuating lever are rotated together by the snatch roll. Thus printing operation is performed.

3,738,471

TYPE HEAD SHIFTING APPARATUS

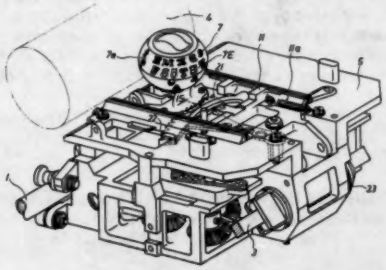
Chien van der Werff, Carolinensiel, and Dieter Hellebrandt, Wilhelmshaven, both of Germany, assignors to Olympia Werke A G Wilhelmshaven, Germany

Filed Feb. 26, 1971, Ser. No. 119,307

Claims priority, application Germany, Mar. 5, 1970, P 20 10 271.0

Int. Cl. B41j 1/60

U.S. Cl. 197—52 **12 Claims**



A type head has two substantially hemispherical surfaces, with lower case and upper case types, respectively, arranged

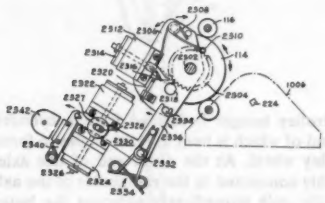
in circular rows. The lower case surface is normally in an operative position for printing. The shaft of the type head is normally connected with setting means for selecting a type for printing, but is turned by shifting means under the control of a shift key to turn the type head 180° to place the upper case surface in a position for printing, and to turn the type head 180° back to the normal position after a desired type has been selected by the setting means, and printed. A clutch is operated by the shift key to connect either the setting means, or the shifting means, with the motor driven drive means of the typewriter.

3,738,472

PRINTER FOR OFF-LINE PRINTING OF SUBSCRIPT AND SUPERSCRIPT CHARACTERS AND CODED VERTICAL TAB SETTING

Frederick P. Willcox, 565 Oenoke Rdg., New Canaan, Conn.

Division of Ser. No. 581,020, Sept. 21, 1966, Pat. No. 3,534,847. This application Sept. 2, 1970, Ser. No. 69,101
Int. Cl. B41j *25/24*
U.S. Cl. 197—71 **19 Claims**



A printer having provision for super-script and sub-script shifting of a typewriter support without having to line-feed the paper forward or backward, and for code signal controlling of this shifting structure.

An electrically-controlled page printer having automatic page sensing and line metering combined with an adjustable vertical tab structure and incremental line-feeding, to execute appropriate desired vertical tubular increments in relation to page position in response to an electrical vertical tab input signal. Optional additions include visible indication of page position and line metering, electrical or mechanical page sensing, magnetic or photo-electric sensing of desired tab positions, and electrical code signal controlled structure for setting and un-setting the vertical tab structure.

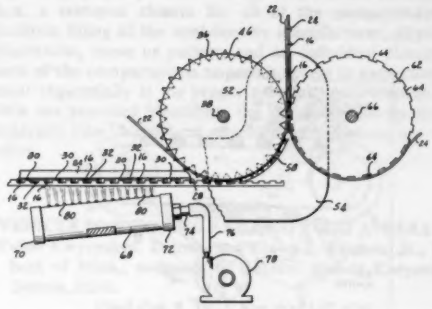
3,738,473

CENTERING MECHANISM FOR COMPONENT SEQUENCING MACHINE

Lloyd D. Herring, Jenison, Mich., assignor to Rowe International Inc., Whippany, N.J.

Filed Mar. 22, 1972, Ser. No. 237,014
Int. Cl. B65g *47/22*
U.S. Cl. 198—29 **10 Claims**

Apparatus for centering electrical components in the space between a pair of grooved lead-supporting conveyor belts which advance the components toward tape-applying apparatus for forming a string of components in a predetermined sequence in which an elongated manifold aligned with the center line between the conveyor belts and located therebelow and slightly inclined downwardly from the belts in a direction away from the tape-applying apparatus is formed with longitudinally spaced nozzles and is supplied with air under pressure to create a plurality of air jets directed into the



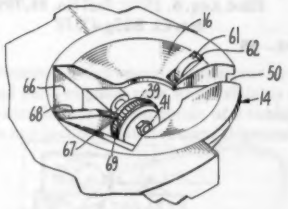
space between the belts to produce a centering action on the components and in which retainer bars located over the belts prevent the components from being blown off the belts.

3,738,474

APPLE ORIENTOR

Robert G. Ellis, Richmond, Calif., assignor to Atlas Pacific Engineering Company, Emeryville, Calif.

Continuation-in-part of Ser. No. 38,402, May 18, 1970, abandoned. This application Nov. 1, 1971, Ser. No. 194,206
Int. Cl. B65g *47/24*
U.S. Cl. 198—33 AA **8 Claims**



This invention relates to an improved device for orienting apples, particularly those known as the Red Delicious variety and which may be relatively long as compared to their diameter. The device is also capable of orienting apples having attached stems. The device is particularly suited to orienting apples fed from a bulk supply and which are largely ungraded as to size. Such apples can vary in size from a diameter of about 2¼ inches to 4½ inches.

3,738,475

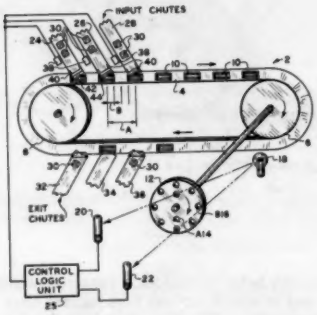
CONVEYOR SYSTEM

Kirkwood M. Lee, Ogden, and Arlyn G. Liddell, Bountiful, both of Utah, assignors to Eaton Corporation, Cleveland, Ohio

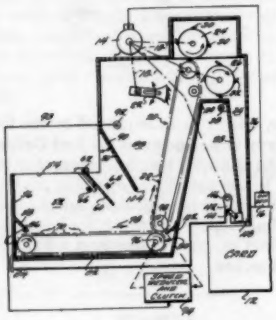
Filed July 16, 1971, Ser. No. 163,192
Int. Cl. B65g *43/00*
U.S. Cl. 198—38 **3 Claims**

A conveyor system comprising a conveyor for transporting articles from any selected one of a plurality of input devices to any selected one of a plurality of output devices having conveyor position means for indicating movement of said conveyor and logic control means for selecting the input and output devices and synchronizing discharge to and from said conveyor with the movement thereof. The system comprises con-

veyor position sensor having an opaque sensor wheel driven by a drive wheel of a belt or chain conveyor. The sensor wheel is formed with a plurality of concentric, annular rows of signal means, with the signal means of each row spaced apart a rotational distance corresponding to a predetermined linear distance of the conveyor belt or chain. Photoelectric and magnetic means are provided to sense passing of the signal means as the sensor wheel is rotated and the conveyor belt is moved.

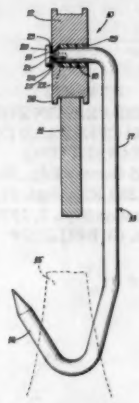


3,738,476
FIBER FEEDING ARRANGEMENT
David F. Hullett, Belmont; Kenneth G. Lytton, and George J. Miller, both of Gastonia, all of N.C., assignors to Fiber Controls Corporation, Gastonia, N.C.
Filed Aug. 6, 1970, Ser. No. 61,799
Int. Cl. B65g *47/18*
U.S. Cl. 198—58 **7 Claims**



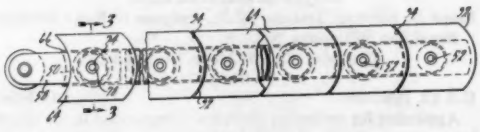
A fiber feeding device having an uplift apron and a feed apron at its lower reach. In front of the uplift apron is an area defined at its upper level by a level control which senses the height of fibers and an sharply angularly disposed front boundry member by which a fiber roll tumbling reserve area is developed. The level control starts and stops the feed apron which is otherwise driven only concurrently with the drive of the lift apron and at a reduced speed to keep from overfeeding the lift apron and to keep the fibers in the reserve area at a substantially constant amount to effect improved fiber opening and feeding of a constant amount of fibers by the lift apron.

3,738,477
PACKING PLANT CONVEYOR TROLLEY
John L. Gename, Naperville, Ill., assignor to Omeco-St. John Co., Omaha, Nebr.
Filed Nov. 17, 1971, Ser. No. 199,423
Int. Cl. B65g *17/20*
U.S. Cl. 198—177 **5 Claims**



The trolley hanger is formed from a cylindrical bar, the upper end of which is bent at right angles to form the axle for the trolley wheel. At the distal end of this axle is a button threadably connected to the remainder of the axle. The distal end of the axle immediately adjacent the button defines a groove. The wheel has an inwardly extending flange which projects into this groove to thereby position the wheel longitudinally of the axle. The bar is stainless steel and the wheel is an iron casting. In an alternative embodiment a supplemental member extends from the hanger at the proximal end of the axle up and over the top of the wheel to engage power driven conveyor pushers.

3,738,478
CONVEYOR CHAIN
Frederick Tourtellotte, Royal Oak, Mich., assignor to The Cross Company, Fraser, Mich.
Filed Mar. 26, 1971, Ser. No. 128,263
Int. Cl. B65g *15/00*
U.S. Cl. 198—181 **10 Claims**



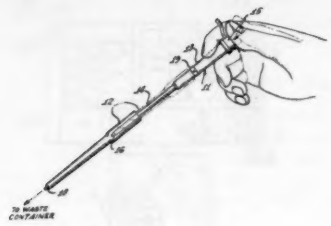
A conveyor chain having top load supporting plates mounted for limited vertical rocking movement and normally occupying a slightly nose-down position but adapted to move to flat horizontal positions when work carrying pallets or the like are supported thereon.

3,738,479

DISPOSABLE RIGID THERMOMETER PROBE COVER

Stephens N. Sato, 1712 Corsica, San Diego, Calif.

Filed Apr. 14, 1970, Ser. No. 28,367
Int. Cl. B65d *85/20*
U.S. Cl. 206—16.5 18 Claims



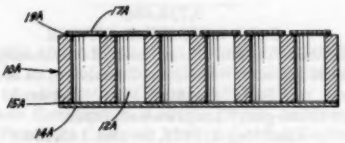
A disposable cover in the form of a rigid, thermally insulating tube having a heat conducting shield at the tip of the cover is adapted to slide over a thermometer probe shaft and engage a cover retaining means on a collar portion of the probe, the cover shield engaging the sensing tip of the probe and driving the probe shaft rearwardly toward the collar during cover installation prior to temperature measurement. The cover is selectively ejected after temperature measurement by manually driving the probe shaft forwardly of the mounting collar with sufficient force to disengage the cover from the retaining means.

3,738,480

MEDICATION CONTAINER

Frank G. Chesley, c/o Central Research Laboratories, Inc., Red Wing, Minn.

Filed Nov. 17, 1971, Ser. No. 199,618
Int. Cl. B65d *43/12, 83/04, 85/56*
U.S. Cl. 206—42 9 Claims



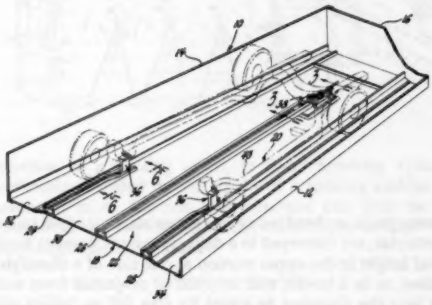
A container for solid medication, such as pills, tablets and capsules, to be taken by a patient over a predetermined time span to facilitate taking of the proper medication at the proper time interval. The container is especially adapted for use by a patient who may be taking several different medications at different time intervals. The container is characterized by having a plurality of compartments adapted to contain the medication, a common closure for all of the compartments to facilitate filling of the container by manufacturer, physician, pharmacist, nurse or patient, and an individual closure for each of the compartments to permit access to each compartment sequentially at the proper time intervals. Desirably indicia are provided identifying the compartments by the appropriate time intervals at which the medications are to be taken.

3,738,481

VEHICLE POSITIONING AND RESTRAINT APPARATUS

Walter Cwycyshyn, Detroit, and Elwyn L. Kitchen, Jr., Troy, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 8, 1971, Ser. No. 187,626
Int. Cl. B60p *7/08*; B61d *45/00*; B65d *85/00*
U.S. Cl. 206—46 M 3 Claims



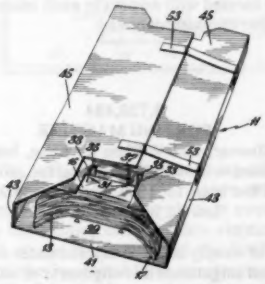
A vehicle positioning and restraint apparatus having a latch mechanism and parallel guide rails which slidably receive tie-down devices attached to the underside of a vehicle for holding the vehicle in a locked position during shipment by a carrier.

3,738,482

FLEXIBLE BAG PACKAGE ARTICLE

Joseph M. Cwikla, Hickory Hills, Ill., assignor to Union Carbide Corporation, New York, N.Y.

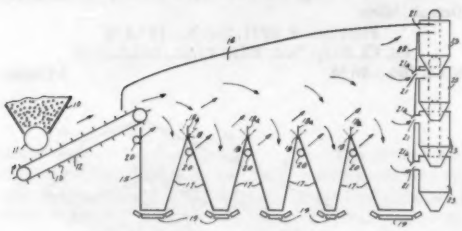
Filed Dec. 29, 1971, Ser. No. 213,755
Int. Cl. B65d *85/00*
U.S. Cl. 206—57 A 8 Claims



A package article of flexible packaging bags such as used in the meat packing industry in conjunction with automatic and

semiautomatic packaging apparatus is made by assembling a multiplicity of flattened stacked flexible bags on a wicket which may be canted to imbricate the bags, securing the wicket with an inner carton element and enclosing and securing the wicketed stacked bags and the inner carton element in an outer carton element.

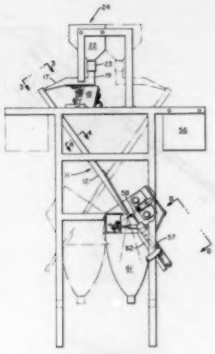
3,738,483
METHOD OF AND MEANS FOR CLASSIFICATION OF HETEROGENEOUS SHREDDED REFUSE MATERIALS
Harold B. MacKenzie, 724 Howard St., Wheaton, Ill.
Filed Nov. 8, 1971, Ser. No. 196,383
Int. Cl. B07b *15/00*
U.S. Cl. 209—12 **24 Claims**



Heterogeneous shredded refuse materials, municipal wastes in particular, are conveyed to a delivery release point at a substantial height in the upper portion at one side of a classifying chamber, as in a tower, and dropped or projected from such point into the chamber to travel by free fall or ballistically through a substantial space. Beyond the release point separating, flushing air is driven in generally the direction of input and through the downwardly gravitating materials to carry off the fractions capable of being airborne. Separation of the materials into classifications by weight or size may be effected by simultaneous gravitational and pneumatic forces after free fall drop into the chamber or by simultaneous ballistic and pneumatic forces after projection of the materials into the chamber. Vertical, and/or horizontal stratification of the materials during classification are provided for. To assist in separation and stratification, mechanical agitating or beater means may be provided. Classification as to those materials which are airborne and those which are not airborne, and their reclassification of materials in each of those two classes according to weight and/or size is achieved, and then collection of the materials according to weight and/or size is effected in receptacles spaced at varying distances from the release point and properly located with respect to each other to attain a significant number of classifications.

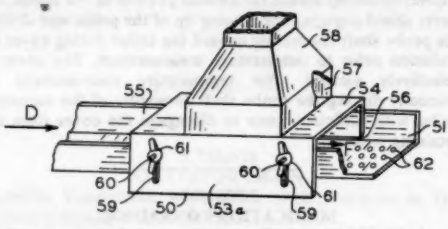
3,738,484
SORTING MACHINE
Michael C. Hoover, and William C. Long, both of Houston, Tex., assignors to Mandrel Industries, Inc., Houston, Tex.
Filed Mar. 15, 1971, Ser. No. 124,320
Int. Cl. B07c *1/04, 5/342*
U.S. Cl. 209—73 **10 Claims**

A number of steeply inclined tapered slides are arranged for gravity assisted singulation and alignment of items such as rice grains that are introduced at the top from vibrating chutes that are gently inclined in the opposite direction. The chutes extend from a common vibrating feed tray and have adjustable entrance gates to equalize the flow rates of the items. A stationary hopper supplies the feed tray through a flexible coupling. At the bottom of each slide, a photoelectric viewer is arranged to operate an ejector for diverting grains having dark spots. A variable background is provided and is adjusted so that the signal induced thereby is identical to that of the



mid-portion of an acceptable grain. Light sources are positioned both above and below the photoelectric means so as to provide extra illumination for the leading and trailing ends of each grain, thus to avoid spurious signals similar to those induced by dark spots but caused by the rounded ends of acceptable grains.

3,738,485
NOVEL CAPSULE FINISHING APPARATUS
Carl C. Garland, 15700 Kentfield, Detroit, Mich.
Division of Ser. No. 88,053, Nov. 9, 1970, Pat. No. 3,693,320.
This application July 17, 1972, Ser. No. 272,185
Int. Cl. B07b *13/10*
U.S. Cl. 209—74 **3 Claims**

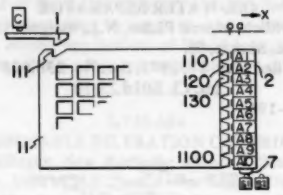


Apparatus and means are provided for finishing pharmaceutical capsules under vacuum whereby any empty capsules present are disqualified and dust and other contamination are cleared from the surfaces of capsules, capsule filling machinery, etc.

3,738,486
CARD RETRIEVAL DEVICE
Sho Takahama; Takeshi Okano, both of Nishinomiya-shi, and Shunkichi Igarashi, Nishiazabu, Minato-ku, all of Japan, assignors to Fuji Shashin Film Kabushiki Kaisha, Ashigarakami-gun, Kanagawa-ken, Japan
Filed May 4, 1971, Ser. No. 140,154
Claims priority, application Japan, May 18, 1970, 45/41888
Int. Cl. B07c *3/16*
U.S. Cl. 209—80.5 **6 Claims**

A device for selectively drawing one of a large number of cards by means of an electromagnet in which the cards are

each provided with an iron piece of a predetermined height at the leading edges of the cards and at different positions from each other. In order to provide selective drawal of the cards,

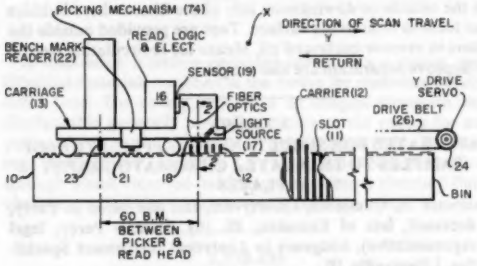


pressing means is provided for holding those cards, pressing means is provided for holding those cards which are not to be drawn. The operation of the pressing means and the electromagnet is controlled by the use of a microswitch.

3,738,487
RANDOM DOCUMENT LOCATOR

Robert W. Way, San Jose; Gilbert F. Clifford, Los Altos Hills; Robert W. Henkel, Cupertino; Arthur W. Odell, Alberton, and Donald F. Smith, Palo Alto, all of Calif., assignors to Varian Adco, Palo Alto, Calif.

Filed Nov. 3, 1971, Ser. No. 195,272
Int. Cl. B07c 3/16
U.S. Cl. 209—80.5 8 Claims



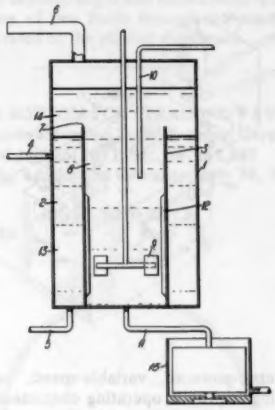
A system for sequentially reading the notched edge code on a microfiche carrier compensates for lateral misalignment of the carrier by the use of multiple banks of fiber optic code sensors. The appropriate bank is energized by use of additional sensors for a code guide formed on the carrier. A prescribed field of view also accommodates bowing of the carrier. Use of fiber optics reduces the need for complicated lenses.

3,738,488
PROCESSES AND APPARATUS FOR THE RECOVERY OF MICRO-ORGANISMS CULTIVATED ON A HYDROCARBON SUBSTRATE

Jean Claude Hondermark, Lavera, France, assignor to The British Petroleum Company Limited, London, England

Filed Oct. 2, 1970, Ser. No. 77,442
Int. Cl. B01d 21/26
U.S. Cl. 210—73 4 Claims

A process and apparatus for use in the recovery of a micro-organism cultivated on a hydrocarbon substrate. The feature of the process and apparatus being the provision of a settling zone wherein the aerated cultivated broth containing the micro-organism undergoes a phase separation and a relatively dense fraction containing spent aqueous medium is removed. The remaining aerated fraction is then subjected, in the

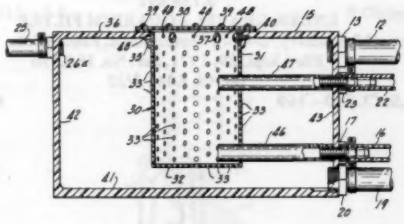


presence of a wetting agent, to foam breaking agitation, preferably provided by the action of a rotating paddle. The deaerated broth fraction thus obtained can then be centrifuged in the normal industrial centrifuges to separate a micro-organism rich product.

3,738,489
ANTI-POLLUTION RECIRCULATION TANK FOR MARINE AND SIMILAR USE

George P. Kraemer, II, 4377 N. Marlborough Drive, Shorewood, Wis.

Filed May 24, 1971, Ser. No. 146,264
Int. Cl. B01d 35/02
U.S. Cl. 210—94 6 Claims



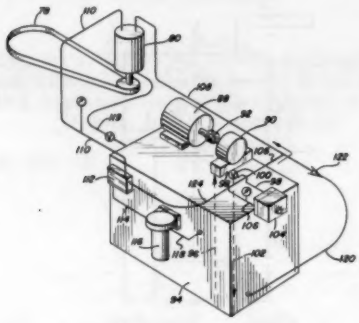
A recirculating tank suitable for receiving effluent from a marine head, or similar device, having an improved filter means comprising a filter element which is circumferentially surrounded by the holding tank primary chamber and has a bottom spaced above the bottom of the holding tank. As another feature, the improved filter construction is attached to only one wall of the holding tank and extends therein; to further extend its utility, the filter element is provided with a transparent visual inspection plate located on the exterior of the holding tank.

3,738,490

INDUSTRIAL-TYPE VARIABLE-SPEED CENTRIFUGE

Louis Tigerman, River Hills, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.

Filed June 4, 1971, Ser. No. 150,015
Int. Cl. B04b 13/00
U.S. Cl. 210—145 23 Claims



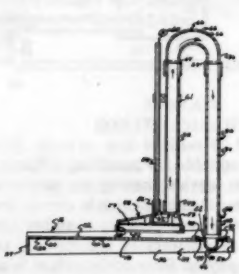
This electric-powered, variable-speed, heavy-duty centrifuge having improved operating characteristics comprises an outer shell with loading aperture, removable cover means for the aperture, support means for the load to be centrifuged rotatably mounted within said shell and drive means exterior of said shell for rotating the support means. The drive means comprises a hydraulic motor operatively connected to the support means for rotating the same, a hydraulic pump for supplying hydraulic fluid under pressure to the hydraulic motor, a dynamoelectric motor operatively connected to the hydraulic pump to drive the same, a hydraulic fluid reservoir, interconnecting hydraulic lines, an adjustable hydraulic pressure controller limiting the pressure from the hydraulic pump so as not to exceed a predetermined value, and an adjustable hydraulic flow controller controlling the flow to said hydraulic motor so as not to exceed a predetermined maximum flow rate. Bypass lines and check and adjustable throttle valves automatically convert the hydraulic system at the end of a centrifuging cycle to a dynamic braking function. The smoothness of the rapid acceleration and deceleration permits the use of a low-cost, simplified removable load holder which requires no interlocking with the rotatable support means and is held in place by gravitational friction alone.

3,738,491

UNDER-GRAVEL AQUARIUM FILTER

Denzel J. Dockery, G-4142 Fenton Road, Flint, Mich.

Filed Sept. 29, 1971, Ser. No. 184,870
Int. Cl. E04h 3/20
U.S. Cl. 210—169 4 Claims



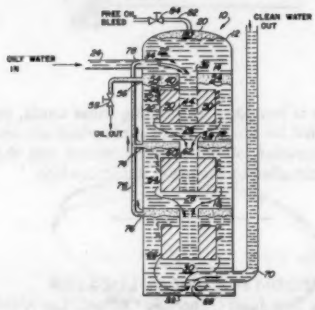
An improved means of filtering and circulating the water in an aquarium wherein gravel at the bottom of the aquarium is effectively employed to trap the waste material and debris so that it can be eliminated by natural decay or by backwashing of the gravel.

3,738,492

OIL-WATER SEPARATOR

Charles H. Trillich, Morris Plains, N.J., assignor to Brunswick Corporation, Skokie, Ill.

Filed Mar. 17, 1972, Ser. No. 235,625
Int. Cl. B01d 23/10
U.S. Cl. 210—196 8 Claims



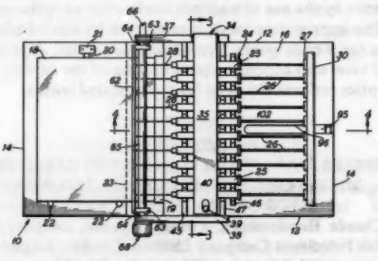
A system for separating a mixture of two liquids having different specific gravities (e.g., an oil-water emulsion) is disclosed. The illustrated embodiment comprises a plurality of vertically arranged separating tanks, the lower chambers containing coalescing filters made of oleophillic materials. Emulsion flows from inside to outside these filters and oil coalesces on the outside or downstream side of the filters where bubbles can form to float to the surface. Taps are provided outside the filters to remove coalesced oil. Means for recirculating free oil to improve separation are also taught.

3,738,493

APPARATUS FOR SIMULTANEOUS APPLICATION OF SAMPLES TO THIN LAYER CHROMATOGRAPHY PLATES

Laurence M. Cummins, Libertyville, Ill., and Janet B. Perry, deceased, late of Evanston, Ill. (by Blanche Perry, legal representative), assignors to Analytical Instrument Specialties, Libertyville, Ill.

Filed Sept. 24, 1971, Ser. No. 183,365
Int. Cl. B01d 15/08
U.S. Cl. 210—198 C 19 Claims



A thin layer chromatography apparatus with universal V-groove seats to support syringes and a movable arm with a resilient pad lowered and locked against the top of the syr-

inges. An adjustable needle positioning means operates to align the tips of all the needles, and then is rotated to press down on the needles to selectively lower the tips relative to the plate. A variable drive member reciprocates a pusher member for the syringes, said drive member traveling along a rotatable screw which is reversible following contact of limit switches during travel of the drive member. A controlled heating element and air jets may be used to hasten rate of solvent evaporation during application of liquid samples to thereby assist reproductibility of sample application.

3,738,494

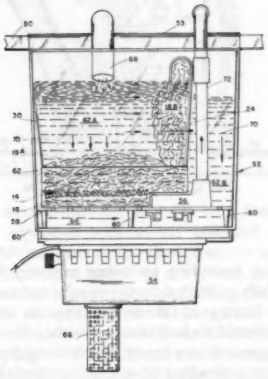
DISPOSABLE FILTRATION CARTRIDGE

Allan H. Willinger, New Rochelle; Albert J. Dinnerstein, Far Rockaway, both of N.Y., and Avihu Kagan, Union, N.J., assignors to Metaframe Corporation, Maywood, N.J.

Filed Sept. 20, 1971, Ser. No. 182,050

Int. Cl. E04h *3/20*

U.S. Cl. 210—169 **7 Claims**



A disposable filtration cartridge comprising a casing, and filtration materials confined in the casing for cleansing debris-laden fluid. The casing includes a lid integral therewith and displaceable generally pivotally relative to the casing for exposing the filtration materials to debris-laden fluid. The casing, furthermore, includes an apertured bottom portion through which cleansed fluid may egress into a cleansed fluid chamber provided in an aquarium filtration housing.

3,738,495

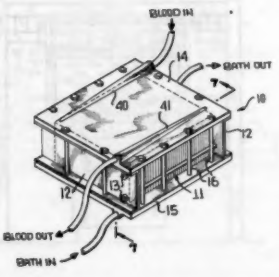
EXCHANGE DEVICE

William G. Esmond, 537 Stamford Road, Baltimore, Md.

Filed Apr. 13, 1971, Ser. No. 133,573

Int. Cl. B01d *31/00*

U.S. Cl. 210—321 **3 Claims**



This disclosure relates to an exchange device, particularly one which may be utilized as an artificial kidney, which includes first and second sets of flow plates separated by a pleated membrane. The flow plates with the pleated membrane entwined therebetween, are combined to define a stack with edges of the flow plates of one set being exposed along one side of the stack and edges of the other flow plates being exposed along the opposite side of the stack. Suitable manifold plates are clamped to opposite sides of the stack in opposition to the exposed edges and sealed relative thereto for effecting the flow of two fluids through the stack with the fluids being separated by the pleated membrane.

3,738,496

FALSE BOTTOM FOR STRAINING VATS

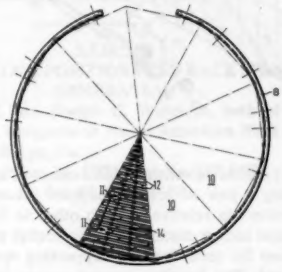
Conrad Lenz, Annenhofstrasse 2, 805 Freising, Germany

Filed July 15, 1971, Ser. No. 162,801

Claims priority, application Germany, July 20, 1970, P 20 35 954.0

Int. Cl. B01d *25/12*

U.S. Cl. 210—488 **4 Claims**



Straining vats are provided with so-called false bottoms. These false bottoms have slots. The function of a straining vat is to separate in the beer manufacture the mash into wort and draff. The wort is to pass through the slots, whereas the draff is to be retained by the false bottom.

3,738,497

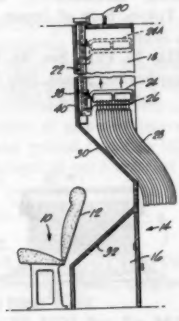
SILENT DRIVE COAT HANGER RACK MECHANISM

Edward E. Betts, Costa Mesa, and Stanley N. Kulczycki, Redondo Beach, both of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed June 1, 1971, Ser. No. 148,459

Int. Cl. A47*l 3/08*

U.S. Cl. 211—1.5 **8 Claims**



A coat hanger rack silently elevated above passenger seats to store coats overhead and to provide more passenger room.

The elevating mechanism consists of a powered, threaded rod on which a threaded nut traverses as the rod rotates, moving the coat rack verically. The nut moves the hanger yoke. Lateral forces are kept from the screw by transmitting them from the yoke to slipper bearing against guides. The Teflon slippers movable along the guide preclude looseness, high bearing pressure and roller noise.

3,738,498

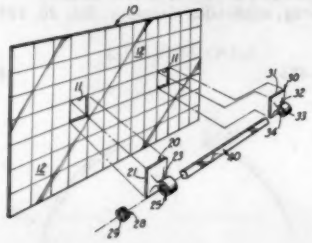
REPLACEABLE TOWEL ROD

Norman C. Handley, 5855 Pinebrook Road N.E., Atlanta, Ga.

Filed Apr. 14, 1971, Ser. No. 133,959

Int. Cl. A47h *1/02*

U.S. Cl. 211—105.1 **2 Claims**



A support means permitting replacement of a towel support rod including a pair of bracket support means mounted in spaced relationship relative to each other to define opposed axially aligned socket means, with the socket means detailed in dimensions for receiving and supporting opposite ends of the towel rod. The bracket support means includes means operatively associated with the towel rod whereby the towel rod can be displaced therefrom. One embodiment of the bracket support means includes an opening extending through at least one of the brackets, with one end of the opening defining a socket portion for receiving and supporting one end of the towel rod and with a second portion of the opening including internal threads for releasably receiving a threaded retaining element therein, whereby the towel rod can be axially displaced through the opening provided in the bracket support means. A second embodiment includes a pair of support brackets having axially aligned supporting sockets for supporting opposite ends of the towel rod, with the supporting sockets including formed channel means permitting the towel rod to be removed from or placed within the socket retaining means.

3,738,499

PAPER HOLDER

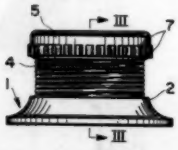
Naboru Takamizawa, Kohhoku-ku, Kanagawa-ken, and Masao Ohsuga, Tokyo, both of Japan, assignors to ADAC Co., Ltd., Tokyo, Japan

Filed May 24, 1971, Ser. No. 146,195

Claims priority, application Japan, July 13, 1970, 45/69508

Int. Cl. A47h *13/00*

U.S. Cl. 211—120 **1 Claim**



A paper holder for tightly gripping name cards, chits, memorandum and other papers and material to be clipped. Materials to be clipped are held fast by the resilient restoring force of a helical tension spring so that it is possible to positively hold the materials fast without damaging them.

3,738,500

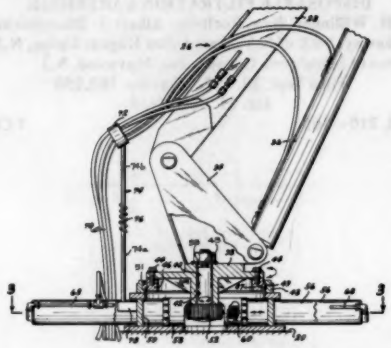
ROTATABLE MOUNTING FOR BOOM TYPE LOADERS

Theodore John Coleman, Raleigh; Richard Alan Jenkins, Tarboro, and William Delano Ostling, Raleigh, all of N.C., assignors to Omark Industries, Inc., Portland, Oreg.

Filed Feb. 23, 1971, Ser. No. 118,007

Int. Cl. B66c *23/84*

U.S. Cl. 212—66 **1 Claim**



A large ring providing an outer raceway for a rotatable mounting rigidly mounted to the reinforced roof of a vehicle cab. A disc having an inner raceway on its periphery is rotatably supported on ball bearings within the outer raceway. A boom is mounted to a brace which is rigidly affixed to the disc. A column depending from the disc carries a pinion gear. Cylinders containing fluid driven pistons are rigidly mounted to the cab on either side of the pinion gear. The pistons carry gear racks that are moved past the pinion gears. The gear teeth of the rack and pinion are interengaged and by driving the rack the pinion gear and disc with boom mounted thereon are rotated.

3,738,501

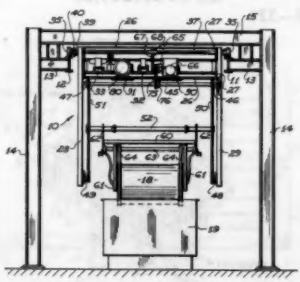
VARIABLE SPEED HYDRAULIC DRIVE SYSTEM

Thomas R. Gill, Cleveland, Ohio, assignor to G. S. Equipment Company, Cleveland, Ohio

Filed Jan. 4, 1971, Ser. No. 103,650

Int. Cl. B66c *19/00*

U.S. Cl. 212—125 **9 Claims**



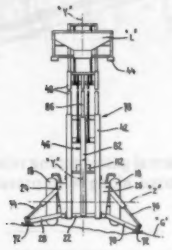
The disclosure pertains to a crane drive system including a fluid crane motor for imparting horizontal motion and a fluid

motor for actuating a hoist mechanism. A variable delivery pump drives the motors in a closed loop hydraulic circuit which includes control valves for starting and stopping the motors. Variable speed control of either or both motors is accomplished by varying the output of the pump.

3,738,502
FORK LIFT LEVELING CONTROL

Fred W. Noller, Hudson, Ohio, assignor to Massey-Ferguson Inc., Detroit, Mich.

Filed Aug. 26, 1971, Ser. No. 175,236
Int. Cl. B66c *23/62*
U.S. Cl. 212—145 **2 Claims**



A load-lifting mechanism for fork-lift type load handling device which is equipped with power actuated extendable links for adjustable support of the device on the ground and automatic control means including a vertical level sensing device interconnected between the load lifting mechanism of the device and the extendable links for automatic adjustment of the extendable links in response to an inclined position of the load lifting device while simultaneously interrupting movement of the load until the lifting device is brought back into level position.

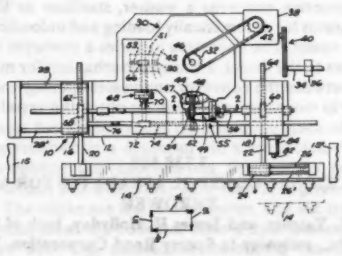
ERRATUM

For Class 214—1 see:
Patent No. 3,738,143

3,738,503
SAFETY OVERLOAD DEVICE FOR TRANSFER MACHINES

Bernard J. Wallis, 25200 Trowbridge Avenue, Dearborn, Mich.

Filed July 29, 1971, Ser. No. 167,323
Int. Cl. B65g *25/04*
U.S. Cl. 214—1 BB **5 Claims**

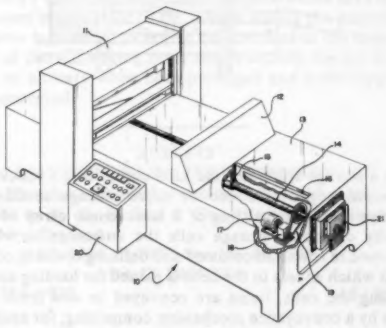


A safety overload device for a transfer machine having a rotatable drive member and a rotatable driven member. Overload protection is afforded by a yieldable driving connection provided between a face of the drive member and a corresponding face of the driven member by a plurality of spring-loaded bearing balls. The two members rotate over a selected angular range in unison as long as the load torque remains below a selected level as established by the spring force on the balls. A position return safety feature is provided by a pin projecting outwardly from the face of one of the two members to engage an arcuate slot in the face of the other member. The pin is positioned at one end of the slot. When the device encounters an overload during rotation in one direction, the yieldable coupling provided by the spring-loaded balls breaks the driving connection between the two members. The slot permits the drive member to continue rotating in the one direction and therefore to slip relative to the driven member so as to traverse the remaining angular distance in the one direction while the driven member remains stationary. When the drive member rotates in the opposite direction, it slips relative to the driven member until it comes to the position where it became disconnected from the driven member. As the drive member rotates through this position, the one end of the slot forcibly abuts the pin to cause the driven member to be rotated in unison with the drive member over the final increment of movement in the latter direction.

3,738,504
BACK GAUGE POSITION FEED BACK SIGNAL GENERATION

Robert W. Vail, and Joseph C. Widmont, both of Newport Beach, Calif., assignors to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Nov. 22, 1971, Ser. No. 200,868
Int. Cl. B23q *5/50*
U.S. Cl. 214—1.6 **4 Claims**



Apparatus is provided for generating position signals useful and particularly advantageous as feedback inputs to a servo control system for a paper cutting machine movable back gauge assembly. The generated feedback signals provide binary-coded position information associated only with key control positions established at selected intervals in the back gauge total traverse and pulsed counting information for incremental position changes in each interval between the key control positions.

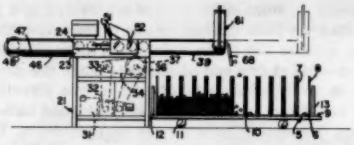
3,738,505
MACHINE FOR LOADING STRIPS INTO BOXES

Elwyn Dean Harris, Corning, Calif., assignor to Commander Industries, Inc., Red Bluff, Calif.

Filed Sept. 20, 1971, Ser. No. 181,722
Int. Cl. B65g *57/03*
U.S. Cl. 214—6 D **8 Claims**

Long molding strips are dropped into parallel boxes from the edge of a carriage initially receiving the strips and across

which the strips are moved laterally by conveyor belts. The moving strips are counted into groups. For each group the carriage advances from one box to the next. After the final box is loaded the carriage returns to start position for a subsequent cycle.



3,738,506

AUTOMATIC STORAGE SYSTEM

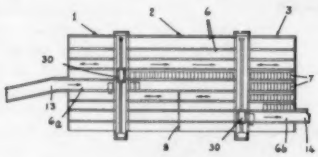
Arthur S. Cornford, 561 Bobolink Rd., and Charles S. Charron, 1607 Watersedge Road, both of Clarkson, Ontario, Canada

Filed May 6, 1971, Ser. No. 140,839

Claims priority, application Great Britain, Nov. 6, 1970, 52957/70

Int. Cl. B65g *1/06*

U.S. Cl. 214—16.4 C **11 Claims**



In a storage system of the kind comprising a racking structure which provides one or more storage sections, each storage section consisting of a honeycomb array of longitudinally extending storage cells the entrances to which are disposed in rows and columns and defining one side of an aisle from which access to the cells is gained for loading and/or unloading the cells, items are conveyed to and from selected cells by a conveyance mechanism comprising, for each aisle: a self-propelled main transporter adapted to run on tracks extending along the aisle, the main transporter being movable along the tracks to and from a selected column of cell entrances, or exits, an elevator carried by the main transporter, the elevator including an elevator platform which is movable to and from a selected cell entrance, or exit, of the selected column, a self-propelled satellite transporter for carrying an item to be stored, the satellite transporter being normally carried by the elevator platform and being adapted to run on tracks in the selected cell, and automatic means for controlling the movements of the satellite transporter to and from the elevator platform.

3,738,507

BIN FOR ACCUMULATING SPHERICAL ARTICLES

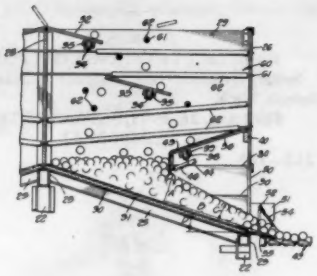
Clarence N. Livingston, Claremont, Calif., assignor to Sunkist Growers, Inc., Sherman Oaks, Calif.

Filed Sept. 13, 1971, Ser. No. 179,738

Int. Cl. B65g *65/40*

U.S. Cl. 214—16 R **8 Claims**

An accumulator bin for substantially spherical articles which spaces the bin delivery gate from the point of application of the accumulated articles to utilize the natural angle of repose of the articles to deliver a single layer of articles at the point of application. Bridging at the delivery gate is retarded by a certain dimensional gate opening relative to the diameter of articles accumulated along with pressure relieving baffles strategically placed.



3,738,508

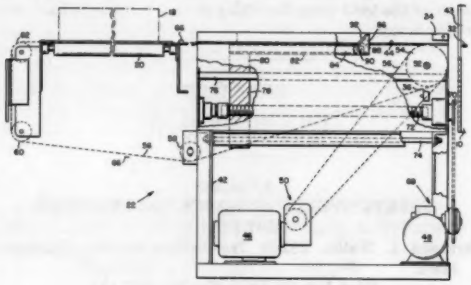
AUTOMATIC LOADING AND UNLOADING APPARATUS FOR WASHERS, STERILIZERS AND LIKE VESSELS

Alfred C. Lawson, Fairport, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Apr. 14, 1971, Ser. No. 133,897

Int. Cl. B65g *25/10*

U.S. Cl. 214—23 **2 Claims**



The invention concerns a washer, sterilizer or like vessel and apparatus for automatically loading and unloading articles from the vessel. The apparatus includes a conveyor for bringing articles to the vessel, a transfer mechanism for moving the articles between the conveyor and vessel opening and a boom arranged to move the articles into or out of the vessel.

3,738,509

DIRECTIONAL CONTROL APPARATUS FOR A BALE THROWER

George E. Yaticila, and James H. Hollyday, both of New Holland, Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

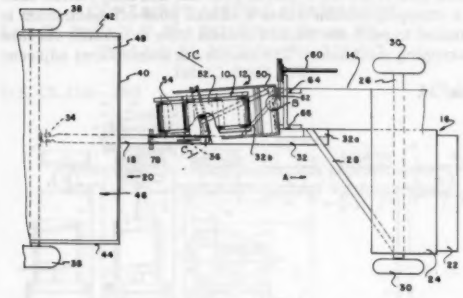
Filed Oct. 6, 1971, Ser. No. 186,882

Int. Cl. B65g *67/22*

U.S. Cl. 214—42 A **12 Claims**

A bale thrower directional control apparatus has a pivotal linkage system connecting a trailing wagon tongue and a bale

thrower pivotally mounted on a bale case that is stiff over the limited arc of movement of the bale thrower and yieldable over the extended arc of movement of the tongue. The linkage system has a main frame with an elongated guide, a slide slideably mounted on said guide and a spring applying a force on the slide away from the pivotal mounting and has a rod



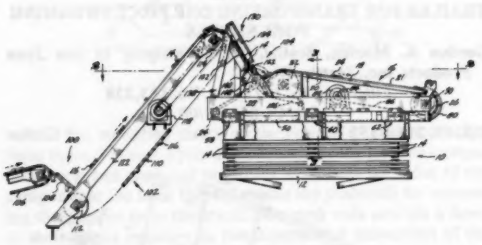
pivotally connected to the bale thrower and to the slide to extend in a generally transverse direction to the slide over the limited arc of movement of the bale thrower and pivoting to apply a substantial force component along the slide against the spring to permit the tongue to continue to swing in a greater arc as the bale thrower remains at the end of the limited arc.

3,738,510

STICKER PLACER APPARATUS FOR PLACING STICKS

Howard C. Mason, Oregon City, Oreg., assignor to H. C. Mason & Associates, Inc., Oregon City, Oreg.

Filed May 20, 1971, Ser. No. 145,229
Int. Cl. B65g *57/26*
U.S. Cl. 214—6 DK **3 Claims**



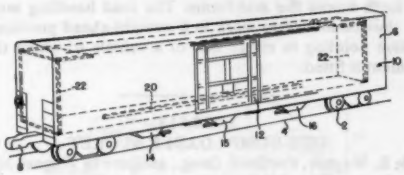
Apparatus for placing sticks on a forming stack of lumber. Sticks are received in a depository in a scrambled condition. An unscrambling conveyor moving through the depository picks up sticks, one at a time, with such in a given oriented position. The sticks are fed to a collector, and are transferred one at a time from the collector onto a stick placement conveyor belt with lugs distributed therealong functioning to establish a laterally spaced relation of the sticks on such belt. A lower run of such belt extends over a support for the forming stack. Restraining means holding sticks in the laterally spaced relation against such lower run is operated to release the sticks whereby they fall onto the stack in properly spaced relation.

3,738,511

CONVERTIBLE RAILWAY HOPPER CAR

Lucien W. Lemon, Renton, and Kristjan H. Palsson, Seattle, both of Wash., assignors to Pacific Car and Foundry Company, Bellevue, Wash.

Filed Mar. 12, 1971, Ser. No. 123,692
Int. Cl. B60d *1/56*; B61d *3/06, 7/32*
U.S. Cl. 214—82 **10 Claims**



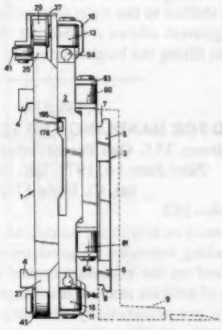
This invention relates to a container such as a railroad car or a truck having bottom hoppers for the discharge of loose bulk cargo which is equally usable for loose bulk cargo or prepackaged stackable cargo. The conversion of the car from a form suitable for packaged cargo to one suitable for bulk cargo is accomplished through the incorporation of self-storing slope sheets or secondary floors for use with loose cargo and the incorporation of hinged covers for use over the hoppers wen the car is being used for packaged bulk cargo. The self-storing slope sheets are secured in position against an end wall or adjacent the ceiling during the hauling of packaged cargo and are against an end wall for the hauling of loose cargo. The slope sheets are moved to a position where they form a continuous sloped floor to the hopper during the unloading of the loose bulk cargo sweeping the contents to the hopper. The use of the self-storing slope sheets enables the car to be filled to its entirety when both packaged and loose cargo is being transported.

3,738,512

MATERIAL HANDLING EQUIPMENT

Geoffrey Marsden, Ackworth, Pontefract, Yorkshire, England, assignor to R. E. Barker & Co., Limited, Featherstone, Yorkshire, England

Filed Feb. 3, 1972, Ser. No. 223,224
Int. Cl. B66f *9/14*
U.S. Cl. 214—730 **15 Claims**



An attachment for a lifting vehicle, particularly a fork lift truck, comprising a rear frame having means for attachment

to a vehicle; a mid-frame; a first hinge between the rear frame and mid-frame; means for opening the first hinge to pivot the mid-frame away from and towards a first lateral side of the attachment, and for closing the first hinge; means for moving the first hinge laterally back and forth across the rear frame; a front plate having attachment points for one or more material handling members; a second hinge between the mid-frame and the front plate; means for opening the second hinge to pivot the front plate away from the mid-frame and towards a second lateral side of the attachment, and for closing the second hinge; and means for moving the second hinge laterally back and forth across the mid-frame. The load handling member may thus be moved to work in a straight-ahead position or a position pointing to either side of a vehicle to which the attachment is fitted.

3,738,513

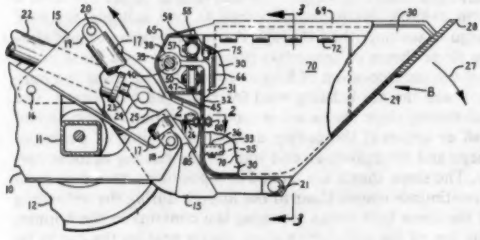
SIDE DUMP LOADER BUCKET

Eddie B. Wagner, Portland, Oreg., assignor to Wagner Mining Equipment, Inc., Portland, Oreg.

Filed May 3, 1971, Ser. No. 139,670

Int. Cl. E02f *3/70*

U.S. Cl. 214—146 E **8 Claims**



The bucket contains an ejector plate movable from side to side to discharge a load from either side of the bucket. Both sides of the bucket are equipped with doors which are opened and closed by double acting hydraulic cylinders and the doors are held closed and released by latch devices actuated by double acting hydraulic cylinders. The ejector plate is actuated by a pair of hydraulic cylinders arranged to move the ejector plate the entire width of the bucket. When a load is to be dumped from the right side of the bucket, the ejector plate is shifted to the left side before the bucket is loaded and when a load is to be dumped from the left side of the bucket, the ejector plate is shifted to the right side before the bucket is loaded. This arrangement allows the bucket to discharge from either side without tilting the bucket laterally.

3,738,514

METHOD FOR HANDLING AND STACKING ARTICLES

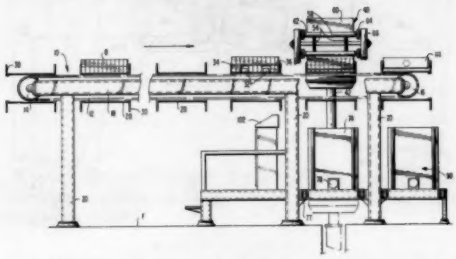
Robert E. Jones, 15 S. Oak Forest Drive, Asheville, N.C.

Filed June 16, 1971, Ser. No. 153,577

Int. Cl. B65g *57/26*

U.S. Cl. 214—152 **12 Claims**

Articles such as bricks are loaded on one end of a horizontal endless loading conveyer in predetermined groups governed by trays fixed on the endless member of the conveyer. When the groups of articles reach a discharge station along the conveyer, they are sequentially discharged transversely of the conveyer onto a horizontal temporary support plate by paddle plates moved by an endless conveyer transversely overlying the first conveyer such that the articles are pushed by the paddle plates onto the temporary support plate. The temporary support plate overlies a vertical elevator and is retractable from below the discharged articles resting thereon to deposit the same on preceding articles stacked on the elevator. The elevator is then lowered a predetermined amount to make space for the next group of articles to be discharged after which the temporary support plate is moved back to its position overlying the elevator to receive the next group of articles to be discharged. When the elevator reaches its lower-most position, having received a full stack of articles, a push-off mechanism including a vertical pusher plate pushes the stacked articles from the elevator to an adjacent shuttle car which then is moved adjacent a further handling station such as a strapping station where a second push-off mechanism is actuated to push the stacked articles from the shuttle car into a strapping mechanism. The shuttle car then returns adjacent



the elevator which then may be raised to a level below the temporary support plate for starting the next stacking operation. The entire system is hydraulically operated under the control of limit switches and timers. An interlocking arrangement of switches and timers ensures that the operation proceeds only when the various components of the system are in proper position. Where the articles are bricks for example and it is desired to form the stack of articles with voids therein for receiving the tines of a fork lift truck, certain trays on the loading conveyer are provided with fixed blocks signifying the position of the voids to the loader. Certain trays may be used for receiving articles which are defective and are discharged at the end of the loading conveyer separately from the normal discharge.

3,738,515

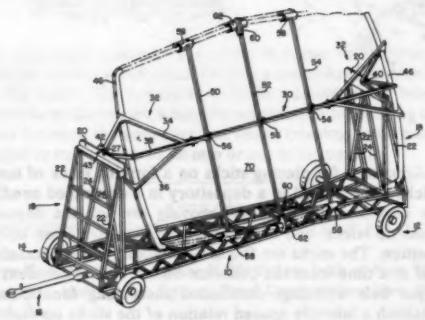
TRAILER FOR TRANSPORTING ONE PIECE SWIMMING POOL SHELLS

Gordon A. Monten, Seattle, Wash., assignor to San Juan Products, Inc., Seattle, Wash.

Filed July 16, 1971, Ser. No. 163,238

Int. Cl. B60p *3/00*

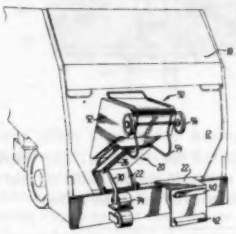
U.S. Cl. 214—152 **7 Claims**



One piece swimming pool shells of glass fiber reinforced construction are transferred from a manufacturing site to an

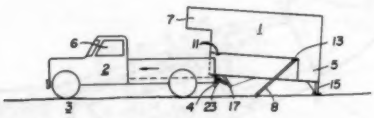
installation site by a trailer which allows the pool shell secured to a support structure to be loaded onto the trailer in a horizontal position and then rotated to a substantially vertical position for transport. At the installation site the pool shell is returned to the horizontal position, lifted from the trailer and set in place in the excavation. The support structure is then removed.

3,738,516
CONTAINER LIFTING MECHANISM
Leon W. Wells, P. O. Box 362, Winter Haven, Fla.
Filed July 31, 1972, Ser. No. 276,417
Int. Cl. B65f 3/02
U.S. Cl. 214—302 **3 Claims**



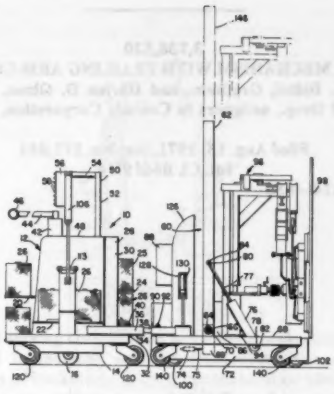
A double handle attachment hingedly semi-fixed to a refuse sink as described, whereby a container may be inverted so that its contents may be spilled into the sink, and the refuse container secured against falling.

3,738,517
PICKUP CAMPER LOADING ARRANGEMENT
Joe R. Luse, 107 E. Washington St., Centerville, Iowa
Filed Mar. 27, 1972, Ser. No. 238,294
Int. Cl. B60p 1/64
U.S. Cl. 214—515 **4 Claims**



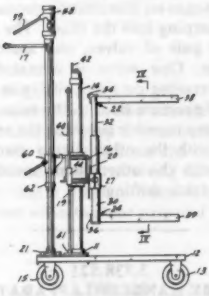
Push rod mounting means on the sides of a camper near the front thereof mount a pair of push rods for loading the camper in a truck and push rod mounting means on the sides of the camper near the back thereof mount the push rods for unloading the camper from the truck. The push rods provide a force at the camper contrary to the direction of movement of the truck in loading and unloading. Fixed back support members at the bottom of the camper at the back thereof support the camper at a determined distance above the ground. A movably mounted front bracing member at the bottom of the camper is biased to extend at an angle slightly less than 90° from the camper when free and held at substantially 0° relative to the camper when the camper is loaded on the truck. Guide means on the truck guide the camper relative to the truck in a manner whereby when the push rods are mounted on the push rod mounting means at the back of the camper at an acute angle with the length of the camper in the direction of the front thereof and the truck is moved forward, the camper unloads from the truck, and when the push rods are mounted on the push rod mounting means at the front of the camper at an acute angle with the length of the camper in the direction of the back thereof and the truck is moved backward under the front of the camper, the camper is loaded on the truck.

3,738,518
POWER UNIT FOR PLATE GLASS HANDLING APPARATUS
Arthur C. Outsen, Jr., 581 Darien Way, San Francisco, Calif.
Filed Apr. 29, 1971, Ser. No. 138,745
Int. Cl. B66c 1/02
U.S. Cl. 214—650 SG **7 Claims**



A multiunit apparatus is provided which is readily assembled and disassembled for easy movement from floor to floor within a building. The apparatus provides an acceptable floor load per unit area, while providing mechanical stability, when heavy loads are extended significant distances upwardly and away from the center of gravity of the assembled apparatus, creating severe torsional stresses. The assembled apparatus is extended longitudinally so as to have the load moving unit at one end, and the drive unit at the other end.

3,738,519
APPARATUS FOR LOADING AND UNLOADING PRINTING MACHINES
James D. Edwards, 116 S. Highway 65, Dumas, Ark.
Filed Oct. 8, 1971, Ser. No. 187,619
Int. Cl. B66f 9/18
U.S. Cl. 214—652 **4 Claims**



This invention provides an apparatus for loading, unloading and turning over from one side to another, a stack of paper for printing machines and the like. The apparatus comprises a movable horizontal base, a support rod mounted on the base and extending vertically upward therefrom, the rod having a sleeve slidably mounted thereon, a turning head rotatably con-

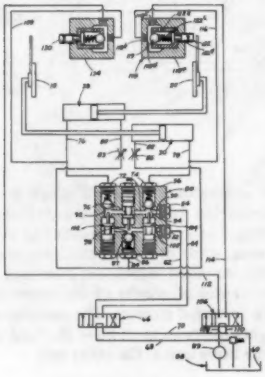
nected to the sleeve of the support rod, the turning head being arranged to rotate clockwise and counterclockwise, a rack connected to the turning head, the rack being arranged to securely hold a stack of paper and to rotate in the same manner as the turning head, means for raising and lowering the rack and for compressing the stack of paper held by the rack, and locking means arranged to allow the rack to rotate and to hold the rack stationary before and after being rotated.

3,738,520

CLAMP MECHANISM WITH TRAILING ARM CONTROL

Stuart R. Didtel, Gresham, and Harlan D. Olson, Portland, both of Oreg., assignors to Cascade Corporation, Portland, Oreg.

Filed Aug. 13, 1971, Ser. No. 171,451
Int. Cl. B66f 9/14
U.S. Cl. 214—653 **4 Claims**



Clamp mechanism including a pair of opposed clamp members movably mounted on a frame. The clamp members are movable toward and away from each other to effect clamping and release of a load, and are movable in the same direction on the frame, to one or the other side, for the purpose of side shifting a load. A fluid-pressure operated ram is connected to each clamp member to move it under power. Hydraulic circuit means connects a source of fluid under pressure with the rams, this circuit means on side shifting connecting the rams in series with one dumping into the other. The hydraulic circuit means includes a pair of valves, one associated with each clamping member. One valve is actuated by the clamp member which is trailing on side shifting in one direction to stop the supply of pressure fluid to the rams prior to the ram for the trailing clamp member reaching the end of its stroke. A valve associated with the other clamp member performs a similar function with the other clamp member moving as a trailing member on side shifting.

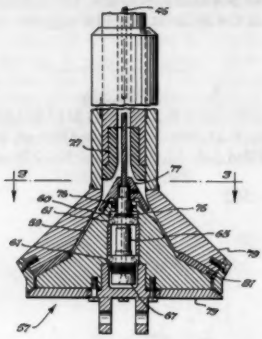
3,738,521

WORK HANDLING APPARATUS

William W. Long, III, Hagerstown, Md., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Jan. 3, 1972, Ser. No. 214,667
Int. Cl. B65h 5/12
U.S. Cl. 214—658 **10 Claims**

In a work handling apparatus, a work engaging member which holds the workpiece is raised or lowered by means such as a cable hoist. Rotational movement of the work engaging member is effected by raising the work engaging member to engage a means for transmitting rotational movement such as



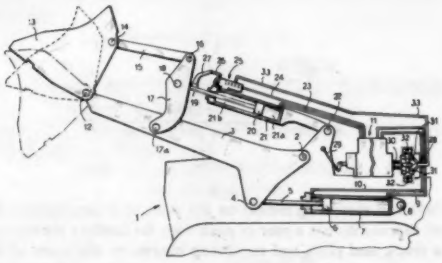
a tubular shaft mounted for rotation. The work engaging member is rotatably mounted on the cable so that the tubular shaft can be turned without twisting the cable.

3,738,522

AUTOMATIC SCOOP POSITIONING DEVICE FOR MECHANICAL SHOVEL

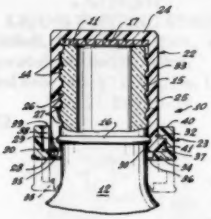
Carlo Cecchi, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy

Filed July 21, 1971, Ser. No. 165,245
Claims priority, application Italy, July 30, 1970, 69632 A/70
Int. Cl. E02f 3/87
U.S. Cl. 214—764 **4 Claims**



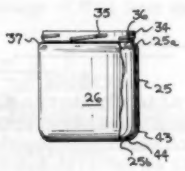
A mechanical shovel having an automatic scoop positioning device is disclosed. The scoop of a mechanical shovel must, for many operations, be positioned in one of two operational positions when returning from a tipping position. An auxiliary distributor is positioned hydraulically between a scoop control ram and a main distributor and feeds the ram when in a first position. Latching means hold the appropriate valve of the main distributor in the return position when it is moved to that position and the auxiliary distributor is set up to sense when the scoop reaches the predetermined operating position and thereupon to divert the hydraulic fluid to lock open the latching means thereby releasing the valve of the main distributor and shutting off the flow of fluid to the scoop control ram. The distributor holds the latching meahs open, so that the movement of the scoop is unrestricted, until a further emptying operation is performed, whereupon the latching means is released and reset for a subsequent operating cycle.

3,738,523
SAFETY CLOSURE CAP
Robert P. Linkletter, 875 Comstock Ave., Los Angeles, Calif.
Continuation-in-part of Ser. No. 27,268, April 10, 1970, abandoned. This application Jan. 10, 1972, Ser. No. 216,712
Int. Cl. A61j 1/00
U.S. Cl. 215—9 17 Claims



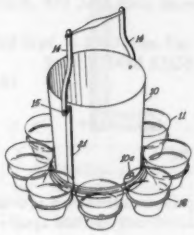
A container safety closure cap having a closure member formed of a generally rigid material which can be locked in place on the container by a locking ring. The closure member has a peripheral lip which fits under a bead on the container, and the locking ring engages the closure member to hold the peripheral lip under the bead. Cooperating projections and grooves are carried by the closure member and locking ring to securely lock the locking ring to the closure member and prevent the closure member from being removed from the container without first unlocking the two members.

3,738,524
PLASTIC COVERED GLASS CONTAINER
Carlton A. Richie, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Mar. 31, 1971, Ser. No. 129,691
Int. Cl. B65d 41/04
U.S. Cl. 215—12 R 1 Claim



The invention disclosed relates to a plastic coated glass container. A wide variety of glass bottles or jars have a covering of shrinkable plastic material shrunken over a selected region of the glass wall. The covering may be first pre-decorated or pre-printed while in a flat form. The covering may be a seamless tube or a sheet wrapped on a mandrel cylinder to a continuous (endless) sleeve form that is telescopically inserted over the bottle encircling the area to be covered. The lower marginal end thereof will overhang the bottom end of the bottle. The sleeve may be of a pre-foamed or non-foamed plastic material, opaque, pigmented or transparent. It is shrunken in situ by heat so that it fits snugly on the bottle surface and conforms to the container wall about its shoulder, body, heel and its bearing surface at the bottom end of the bottle to provide: (1) a body covering protecting the glass against surface damage, (2) a pre-printed label or decoration for the bottle, and (3) a plastic covering on the lower end bearing surface protecting those areas from damage; and further providing sufficient protection for the glass to eliminate carton partitions, dividers or the like currently used.

3,738,525
SALAD SERVING COMBINATION INCLUDING CONTAINER FOR SALAD INGREDIENTS AND CUPS FOR DRESSINGS OR GARNISHES REMOVABLY SUPPORTED THEREBY
Robert E. Knapp, 1489 Ardwick Road, Columbus, Ohio
Filed June 7, 1971, Ser. No. 150,527
Int. Cl. B65d 21/02; A47g 19/32, 23/08
U.S. Cl. 220—23.4 6 Claims



A salad serving combination including a main container for the salad ingredients, such as fresh vegetables or fruits, preferably of bucket-like form. The combination also includes carrier means removably supported from the container but normally removably supporting a plurality of cups for various dressings and/or garnishes around the exterior of the bucket for ease in selection for use with a serving of the salad ingredients taken from the container.

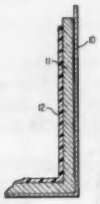
3,738,526
CONTAINER WITH PERMANENTLY ATTACHED TEAR STRIP AND TAB
Arthur P. Zundel; Leon M. Patarini; Warren A. Nickel, and Frank Kratochvil, all of Chicago, Ill., assignors to National Can Corporation, Chicago, Ill.
Filed Jan. 27, 1972, Ser. No. 221,214
Int. Cl. B65d 17/20
U.S. Cl. 220—54 21 Claims

A container top is formed with a tear strip that has a base end permanently connected to the container wall and a pull tab connected to the tear strip for manual severance of the major portion of the tear strip from the container wall. The pull tab has guide means for receiving severed edges of the container wall so that a major portion of the tab is located within the container when the tear strip and tab are in the fully opened position.

3,738,527
METHOD OF MANUFACTURING AND LINER FOR LIQUID STORAGE TANK
Joseph W. Townsend, 54 Union Street, Pennsville, N.J.
Filed Nov. 18, 1970, Ser. No. 90,729
Int. Cl. B65d 5/56
U.S. Cl. 220—63 R 1 Claim

A vessel is provided having a substrate bonded to the interior thereof and an inner facing layer bonded to the substrate,

the substrate providing a distortable mat of a closed-cell material which acts as a resilient spring means to absorb distortion of the flexible impervious inner facing layer thereby inhibiting rupture and facilitating non-destructive movement of the liner.



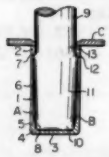
A chemical reactor or storage tank is provided having on its internal surfaces a closed-cell foamed synthetic resin and on the interior thereof a corrosion-resistant plastic material, the two layers being intimately bonded together and to the exterior shell of the tank or reactor.

3,738,528

CONTAINER AND A METHOD FOR PRODUCING SAME

Takayoshi Kagami, Tokyo, Japan, assignor to Daiwa Can Company Ltd., Tokyo, Japan

Filed July 29, 1971, Ser. No. 167,250
Claims priority, application Japan, Apr. 3, 1971, 46/20072
Int. Cl. B65d *7/42*
U.S. Cl. 220—72 1 Claim



A method for producing a tinplate cylindrical container with a bottom end having a thick walled upper portion by drawing and ironing in which the wall of the main part of the container body near the bottom end is made thick while the wall thereof near the upper portion is made thin, and in which the gradient angle or taper representing the variation of the wall thickness of the container main body part is made smaller than that of the punch core of the ironing means so as to make it possible to readily strip said container from said punch core. There is also provided a container of that kind in which the upper portion of said container is not subjected to the final ironing so that the hardness thereof is lower than that of the middle part of the body of the container to prevent the cracking of the flange which would otherwise be encountered.

3,738,529

INSULATING CONTAINER COVER

Billy L. Rose, 1632 Oakview, Kensington, Calif.

Filed Apr. 30, 1971, Ser. No. 138,878
Int. Cl. B65d *25/00*
U.S. Cl. 220—85 H 3 Claims

An insulating container cover to encompass a pop top beverage can to keep the contents of the can cool after removal from the refrigerator. The insulating cover is formed of flexible styrofoam plastic and has the same general cylindrical shape as the container it is to cover. The cover has an opening formed in the upper portion of its side wall and its top wall to give access to the drink opening in the beverage container so that the insulating cover can be left on the container

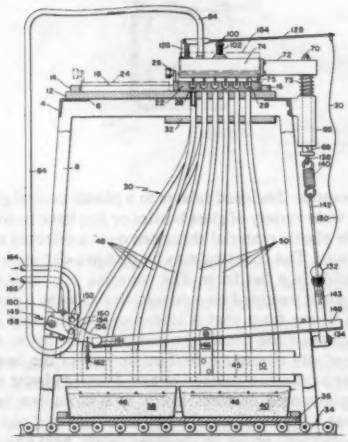
while drinking the beverage therefrom. The cover is open at the bottom to permit it to be slipped easily over the beverage container and has a series of inwardly extending bosses for engaging under the bottom edge of the beverage container to secure the cover to the container. After the container has been emptied the cover is slipped off for reuse and the container is discarded in the usual fashion.

3,738,530

SEEDER DEVICE

Hyman M. Fine, 245 Smith Street, and James L. McKearney, 10 Reynolds Street, both of Attleboro, Mass.

Filed July 26, 1971, Ser. No. 165,932
Int. Cl. A01c *5/00*
U.S. Cl. 221—211 10 Claims



A device for planting seeds in an orderly array which has a plurality of suction needles adapted to be positioned over a seed-carrying tray, an air supply for first pulling air through the needles to removably attach a seed to the end of each needle and then blowing air through the needles to expel seeds,

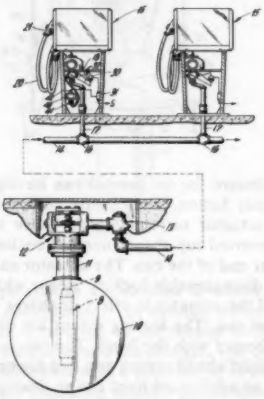
transfer means for separating the needles from the tray so that the needles will be in a position where discharge of the seeds from the end of the needles will cause them to fall in an ordered array on an area to be seeded, additional means for making sure the seeds do not stick to the ends of the needles, and valve means for changing the flow of air through said needles.

3,738,531

LIQUID PUMPING SYSTEM

Thomas O. Mitchell, Muskegon, Mich., assignor to Bennett Pump Incorporated, Muskegon, Mich.

Filed Feb. 10, 1971, Ser. No. 114,288
Int. Cl. B67d 5/34
U.S. Cl. 222—52 **10 Claims**



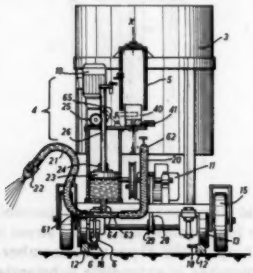
A control system for the dispensing of gasoline includes leak detector means disposed in the main supply line, and a switch means responsive to the attitude of the leak detector means and operative to control the discharge of fluid from the dispenser nozzle valve. By this arrangement, the switch means insures that the leak detector means is in its fully opened position, prior to discharge of fluid from the dispenser nozzle valve.

3,738,532

APPARATUS FOR AUTOMATICALLY DISTRIBUTING LIQUID FEED RATIONS

Serge Fimbault, Dordogne, Saint Hilaire D'Estissac, France

Filed Mar. 8, 1972, Ser. No. 232,776
Claims priority, application France, Mar. 10, 1971, 7108592; Nov. 8, 1971, 7139907
Int. Cl. B67d 5/08
U.S. Cl. 222—63 **4 Claims**



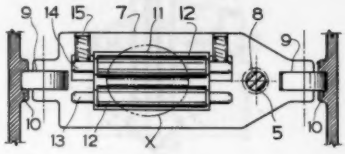
Apparatus for automatically distributing liquid, or semi-liquid, feed to the feed boxes of a series of animals includes a proportioning mechanism which can be programmed to distribute different specific proportions of feed to each feed box; the feed being delivered by means of a piston and the displacement of the piston being controlled by adjustable stops attached to the surface of an intermittently advanced cylindrical programming device which is synchronized with the movement of the feeding device along the feed boxes.

3,738,533

MOTORIZED COLLAPSIBLE TUBE DISPENSER

James G. Bertrand, 933 Josephine Street, Windsor, Ontario, Canada

Filed Sept. 7, 1971, Ser. No. 178,295
Int. Cl. B65d 35/28
U.S. Cl. 222—102 **1 Claim**



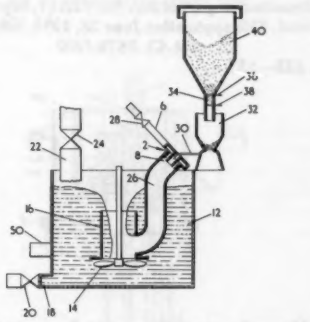
This invention consists of an electrically operated collapsible tube dispenser suitable for the dispensing of such products as tooth paste, shaving cream, etc. It comprises an enclosure in which the said tube is suspended by its base and its contents being discharged at the bottom of the enclosure. The squeezing pressure upon the tube is provided by a pair of rollers which travel downward on both sides of the tube, and which are activated by means of an electric motor.

3,738,534

APPARATUS FOR DISPERSING PARTICULATE MATERIALS

John Abbott, Burton-on-Trent, England, assignor to Coal Industry (Patents) Limited, London, England

Filed Dec. 9, 1970, Ser. No. 96,507
Claims priority, application Great Britain, Dec. 23, 1969, 62,655/69
Int. Cl. B67d 5/56
U.S. Cl. 222—129 **5 Claims**



A method of, and apparatus for, dispersing particulate materials in fluids, particularly for dispersing materials e.g. polyacrylamide having particles which, if in contact on becoming wetted, agglomerate to form a non-dispersable mass. A vortex chamber is used to provide a hollow cylindrical rapidly flowing film of fluid onto the inner surface of which the material is introduced.

3,738,535

MIXING AND PROPORTIONING SYRINGE

Augustus H. Nicholls, 1170 Longfellow Drive, Manhattan Beach, Calif.

Filed Oct. 26, 1970, Ser. No. 84,058
Int. Cl. B67d 5/52
U.S. Cl. 222—137 15 Claims

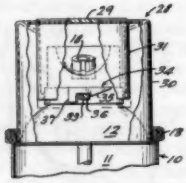
A mixing syringe including a cylindrical barrel having a transverse web dividing it into two chambers to receive components to be mixed, the barrel having a conical end wall having outlet openings from each chamber, a conical end cap fitting over the end wall and rotatable relative to it for receiving and mixing materials discharged from the barrel and ejecting them from an aperture in the cap, a plunger having two sections, one received in each barrel chamber and movable axially to discharge the materials in the chambers, and a ratchet drive for engaging a transverse wall of the plunger and simultaneously imposing a longitudinal and rotational force on the plunger for causing the plunger to move for ejecting materials and at the same time rotating the barrel relative to the end cap.

3,738,536

CHILD PROOF PROTECTIVE OVERCAP FOR AN AEROSOL CAN

Peter P. Gach, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Continuation-in-part of Ser. No. 72,917, Sept. 17, 1970, abandoned. This application June 28, 1971, Ser. No. 157,423
Int. Cl. B67b 5/00
U.S. Cl. 222—153 8 Claims



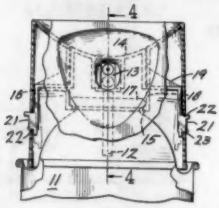
A child-proof protective overcap for an aerosol can. The can has a valve stem cap and an actuator nozzle centered therein, the valve stem cap being retained on the can by frictional engagement thereof with an annular lip on the valve mounting seam at the top of the breast portion of the can. The overcap has an inverted cup-shape with a circular, stiffly resilient top and two concentric skirts depending therefrom. The inner skirt extends circumjacently to the valve stem cap and the outer skirt extends into the annular groove at the seam between the body and breast portion of the can. The inner skirt and the valve stem cap have interfitting locking means. The resilient top biases the interfitting means into locking engagement and the locking means are disengagable by flexure of the top of the overcap and axial movement of the inner skirt followed by rotation of the overcap. In the preferred embodiment the interfitting means are bayonet-type lugs and ramps.

3,738,537

SAFETY CLOSURE FOR AEROSOL CAN

Peter P. Gach, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Dec. 7, 1971, Ser. No. 205,650
Int. Cl. B67b 5/00
U.S. Cl. 222—153 2 Claims



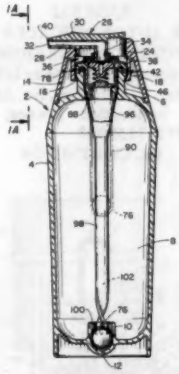
A safety closure for an aerosol can having a top central valve and spray button. The closure comprises an inverted, cup-shaped actuator surrounding the valve stem and spray button. An inverted cup-shaped overcap encloses the actuator and the upper end of the can. The actuator and overcap have cooperating disengageable locking means which prevent the movement of the actuator to effect discharge of the contents of the aerosol can. The locking means are disengageable by depression thereof with the hand. The cap is so constructed that a small child's hand cannot grip and disengage the locking means while an adult-sized hand can so disengage the locking means.

3,738,538

DISPENSER FOR FLOWABLE SUBSTANCES

William H. Roper, Los Angeles, and Robert N. Ross, Fountain Valley, both of Calif., assignors to Plant Industries, Inc., Anaheim, Calif.

Filed Feb. 11, 1971, Ser. No. 114,485
Int. Cl. B67d 5/06
U.S. Cl. 222—183 26 Claims



A viscous fluid dispenser using an expansible member or bladder wherein longitudinal and radial stress is imparted to the material making up the expansible member, and wherein the expansible member is extendible substantially the entire length of the interior cavity of the container whereby substantially complete dispensing of the fluid retained within the expansible member is obtained. A unique assemblage of valve components of low cost and relatively easy fabrication permits

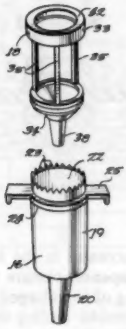
assembly of containers of the expansible bladder type in an efficacious manner thereby providing low cost containers.

3,738,539

SYRINGE WITH SELF-RETURNABLE PLUNGER

Frank R. Beich, Wilmette, Ill., assignor to American Hospital Supply Corporation, Evanston, Ill.

Continuation-in-part of Ser. No. 35,846, May 8, 1970, Pat. No. 3,661,152. This application June 3, 1971, Ser. No. 149,486
Int. Cl. A61m *5/00*
U.S. Cl. 222—341 8 Claims



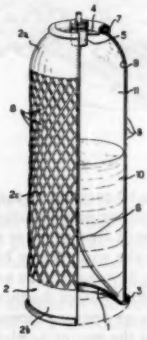
A plunger-type syringe is provided in which the plunger returns after it is depressed. The syringe includes an elastic membrane which is received by the tubular barrel and interposed between the barrel and the plunger. The open rear end of the barrel is provided with a plurality of circumferentially spaced rearwardly extending pointed projections, and a portion of the membrane extends over the projections and is secured against longitudinal movement thereby. Another portion of the membrane is engaged by the plunger for longitudinal movement with the plunger within the barrel, and as the plunger is depressed, the membrane is stretched and provides a force tending to return the plunger to its original position. When the plunger is released, the elastic membrane returns the plunger.

3,738,540

CONTAINER FOR CORROSIVE PRODUCTS TO BE STORED UNDER PRESSURE

Bruno P. Morane, Paris, France, assignor to L'Oreal, Paris, France

Filed June 1, 1971, Ser. No. 148,396
Int. Cl. B65d *83/14*
U.S. Cl. 222—397 4 Claims



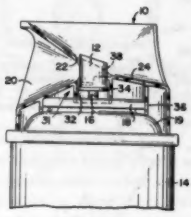
Container for corrosive fluids to be stored under pressure comprises a strong, rigid, perforate can carrying a filling and dispensing valve and an inner plastic bag impermeable to liquids but permeable to gases, the interior of which is connected to said valve.

3,738,541

SPRA-MATE OVERCAP

James E. Greenebaum, II, Highland Park, Ill., assignor to Seaquist Valve Company, Cary, Ill.

Filed Aug. 5, 1971, Ser. No. 169,256
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.1 4 Claims



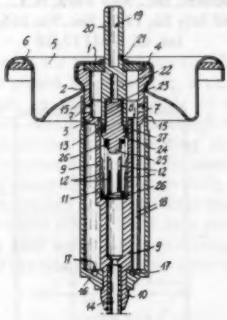
A self-aligning aerosol overcap wherein the central button-receiving orifice includes a Z-shaped step or protrusion formed on the internal wall to control vertical actuation of the button and to avoid "hang-up" of the button on the spray orifice in the overcap. A key on the wall of the receiving orifice projects into a vertical groove in the button to provide automatic orientation of the terminal orifice of the button and the spray orifice in the overcap. This is accomplished by placing the overcap over the button such that the key rests on the top slanted surface of the button. By gravity, the overcap will thereafter slide and rotate relative to the button until the key drops into the vertical groove formed in the button.

3,738,542

VALVE FOR DELIVERING METERED AMOUNTS OF AEROSOL MATERIAL FROM CONTAINERS THEREFOR

Tomaso Ruscitti, Milan, Italy, assignor to Coster Tecnologie Speciali S.p.A., Milan, Italy

Filed Apr. 13, 1971, Ser. No. 133,526
Claims priority, application Italy, May 2, 1970, 24095 A/70
Int. Cl. B65d *83/14*; B65b *3/04*
U.S. Cl. 222—402.16 6 Claims



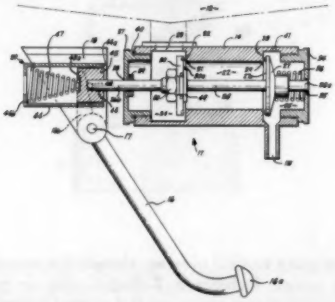
Valve for delivering metered amounts of aerosol materials from containers therefor. The valve comprises two bodies fast with each other and defining two distinct chambers communicating with each other. One of the chambers is connected to

the container for the material to be delivered by a conduit, in which a piston is movably accomodated and fast with the valve stem, and allowing or inhibiting the communication between said conduit and the chamber connected thereto whether the stem is at rest, or is pressed for the material delivery.

3,738,543
MEASURING VALVE HAVING SPRING-LOADED ACTUATING MECHANISM

Peter J. A. Aperlo, 15952 Maracaibo, Hacienda Heights, Calif.

Filed June 1, 1971, Ser. No. 148,600
Int. Cl. G01f 11/16
U.S. Cl. 222—453 **15 Claims**



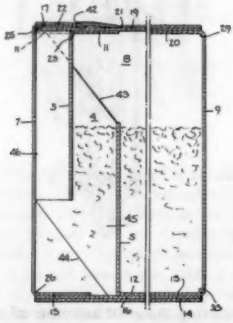
A valve for dispensing a measured volume of liquid includes a spring-loaded actuating mechanism. A measuring chamber is closed at either end by respective valve discs supported by a valve stem. The valve stem and discs are biased to open the inlet end and close the outlet end, thereby permitting liquid to fill the measuring chamber. When the valve stem is displaced by the actuating mechanism, the discs close the inlet end and open the outlet end to dispense a measured volume of liquid.

To insure rapid opening of the measuring valve, an actuating mechanism includes a piston slidingly disposed in a cylinder and attached to the valve stem. A pivotally mounted control lever moves the cylinder so as to compress against the piston a spring contained within the cylinder. When the compressed spring force exceeds the bias on the valve stem, the spring rapidly displaces the piston, valve stem and discs to the liquid dispensing position.

3,738,544
DISPENSING CARTON

Randolph F. Brown, Hempstead, N.Y., assignor to Owen W. Coleman Associates, Inc., New York, N.Y.

Filed July 26, 1971, Ser. No. 166,199
Int. Cl. G01f 11/26
U.S. Cl. 222—454 **6 Claims**

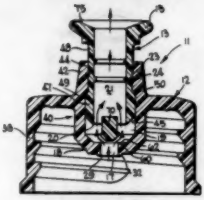


A carton provided with a plurality of chambers for dispensing predetermined measured quantities, which carton includes a member providing both structural support and separation for the chambers.

3,738,545
SLIDING PLUNGER DISPENSING CLOSURE

Gerald L. Roy, Lancaster, Pa., assignor to Kerr Glass Manufacturing Corporation, Los Angeles, Calif.

Filed Mar. 12, 1971, Ser. No. 123,610
Int. Cl. B65d 4/28
U.S. Cl. 222—525 **1 Claim**

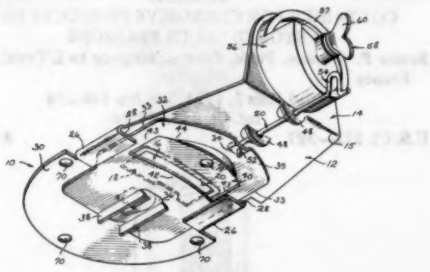


To prevent large increases in the force required to pull a sliding plunger of a dispenser closure to its open position and to prevent cold flowing of an enlarged annular sealing surface on the plunger, the annular sealing surface is located within the confines of a smaller diameter aperture when the plunger is in its closed position and blocking fluid flow. Preferably, the plunger is positively retained against popping up to the open position by a sealing ring which is deflected radially outwardly with insertion of the annular sealing surface therein and which, when deflected, exerts a gripping force on the annular sealing surface of the plunger.

3,738,546
METERING DEVICE FOR SECUREMENT TO THE HOPPER OR CONTAINER OF A DISTRIBUTOR OF SEEDS AND OTHER FLUENT MATERIAL

Paul L. Speicher, North Manchester, Ind., assignor to The Cyclone Seeder Company, Urbana, Ind.

Filed May 10, 1971, Ser. No. 141,550
Int. Cl. B67d 3/00
U.S. Cl. 222—561 **1 Claim**



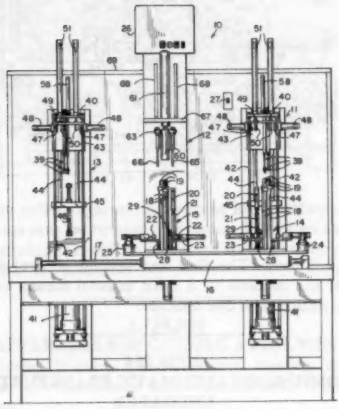
A device which can be secured to the hopper or container of a seed or other fluent material distributor and which serves to regulate the amount of seed or other material which passes from the container to the spreader or broadcaster of the distributor. The metering device includes a mounting plate which is securable to the bottom wall of the fluent material container and which has a discharge opening formed therein. A shiftable door plate is carried by the mounting plate and can be made to selectively cover a portion of the discharge opening in the mounting plate and thus regulate the effective area of the discharge opening.

3,738,547

GLOVE TURNING MACHINE

Travis Horton, Kewanee, Ill., assignor to Boss Manufacturing Company, Kewanee, Ill.

Filed Feb. 12, 1972, Ser. No. 243,236
Int. Cl. A41b *43/00*
U.S. Cl. 223—40 11 Claims



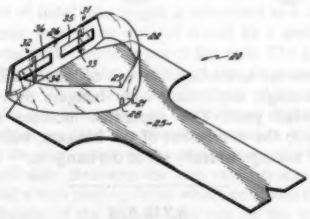
A semi-automatic machine to turn leather gloves or leather palm gloves right side out after sewing with the inner side out, which fully turns the leather finger tips fully and properly every time and which performs the turning operation completely and rapidly and avoids the necessity for specially poking the fingers out one finger at a time.

3,738,548

SELF-ADJUSTING SHIRT COLLAR SUPPORT

Robert I. Lojinger, 6405 Shadygien, Cincinnati, Ohio

Filed May 25, 1972, Ser. No. 256,706
Int. Cl. D06c *15/00*
U.S. Cl. 223—83 9 Claims



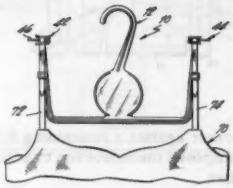
A paper shirt board around which a shirt is folded is provided with an upwardly folded flap to which is adjustably attached a transparent plastic shirt collar support. The collar support is inserted beneath the collar of a shirt and is provided with tabs which slide in slots in the flap of the board so that the support may assume the size of the collar of the shirt folded about the board. In another embodiment, elongated tabs are provided on the flap which insert into slots at the ends of the collar support. The collar support and shirt board are symmetrically designed, and a support centers on the front collar button of the shirt.

3,738,549

BRASSIERE HANGER AND DISPLAY SYSTEM

Walter Driscoll, Bridgeport, Conn., assignor to Warnaco Inc., Bridgeport, Conn.

Filed Nov. 1, 1971, Ser. No. 194,637
Int. Cl. A47j *51/094*
U.S. Cl. 223—85 5 Claims



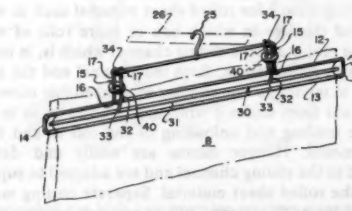
A brassiere hanger includes hanger arms arranged and constructed to receive the shoulder straps of a brassiere for displaying the brassiere in a dependent relation from said brassiere hanger. The brassiere hanger is so constructed that a plurality of brassiere hangers and the respective brassieres associated therewith may be stored in stacked relationship with the brassiere hangers one atop each other at the bottom of the stack and the respective brassieres one atop each other at the top of the stack.

3,738,550

FABRIC HANGER

David Van Etta, Spring Grove, and Robert J. Ballenger, Highland Park, both of Ill., assignors to Central Specialties Co., Chicago, Ill.

Filed May 27, 1971, Ser. No. 147,501
Int. Cl. A47j *51/14*
U.S. Cl. 223—85 9 Claims



A hanger assembly for bulky fabrics and the like, comprising an elongated closed loop member, a pair of upstanding members disposed on the upper edge of the closed loop member in opposed relationship with respect to one another, a crossbar interconnecting the upstanding members, a hook mounted on the crossbar for hanging the assembly from a rack or the like, and a clamping member pivotally mounted on the crossbar and constructed to be swivable throughout an arc transverse to the plane of the closed loop member thereby to grasp and firmly hold bulky fabrics between an edge of the clamping bar and the side edges of the closed loop member.

3,738,551

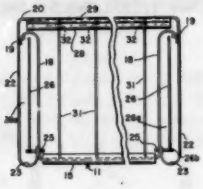
ARTICLE HOLDING DEVICE

Helmut Dieter, P.O. Box 1408, New Port Richey, Fla.

Filed Oct. 5, 1971, Ser. No. 186,711
Int. Cl. A45c *1/04*
U.S. Cl. 224—26 R 5 Claims

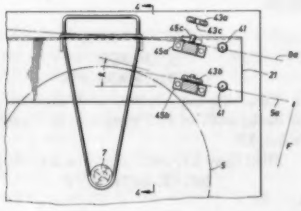
A device for securing articles in place which includes two casing units. One casing unit supports resilient members for

holding articles inserted into the watch against a wall member of the other casing unit. The two casing units are movable



away from each other against a restraining force exerted by biasing members disposed therebetween to accommodate articles of different sizes.

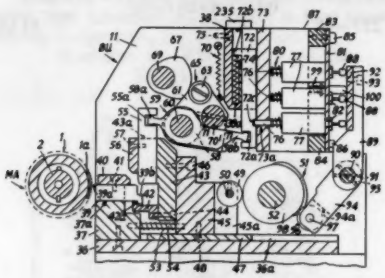
3,738,552
CUTTING MEANS FOR ROLLED SHEET MATERIAL
Richard C. Roeder, 8111 Bromley, Houston, Tex.
Filed Mar. 11, 1971, Ser. No. 123,292
Int. Cl. B26f 3/02
U.S. Cl. 225—34 **11 Claims**



A cutting means for rolled sheet material such as wrapping paper and the like in which one or more rolls of wrapping paper are mounted on a sliding channel which is, in itself, supported by a rolling track. Both the channel and the track are adapted to telescope one another so as to enable movement of the roll out from under a wrapping counter so as to thereby facilitate loading and unloading of the roll to and from the cutter means. Hanger means are easily and detachably mounted to the sliding channel and are adapted to support the axle of the rolled sheet material. Separate cutting means are provided for each material roll as are cutting weights which are intended to bear upon the material surface and preclude ragged edges as the material is being severed by the cutting means.

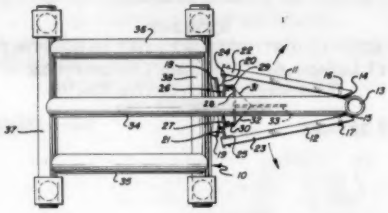
3,738,553
MACHINE FOR THE PREPARATION OF PATTERN CARRIERS FOR CIRCULAR KNITTING MACHINES
Dennis Gell, Leicester, and Jan Hogbart Hvidsten, Ashby de la Zouch, both of England, assignors to Stibbe-Monk Developments Limited, Leicester, England
Filed Feb. 22, 1972, Ser. No. 228,030
Int. Cl. B26f 3/00
U.S. Cl. 225—97 **20 Claims**

A machine for breaking off peripheral teeth from pattern discs used on knitting machines. The machine has a mandrel for holding the discs. The mandrel is operated from a first control means comprising both a gear box arrangement including gear and camming mechanism for imparting intermittent relative longitudinal movement between the mandrel and teeth breaking-off tools, and also an electrically controlled incremental drive means for intermittently rotating the mandrel from one tooth position to the next. A second control means in the form of a tape controls, inter alia, the selection of the



breaking-off tools. The first and second control means are caused at the dictates of a third control means to function strictly in unison with one another.

3,738,554
CONTINUOUS AUTOMATIC FRANKFURTER UNLOADER
W. H. Neubeck, Jr., Chicago, and Anthony J. Kloska, Chicago Heights, both of Ill., assignors to The Griffith Laboratories, Inc., Chicago, Ill.
Filed June 30, 1972, Ser. No. 268,151
Int. Cl. B65h 17/42
U.S. Cl. 226—104 **8 Claims**

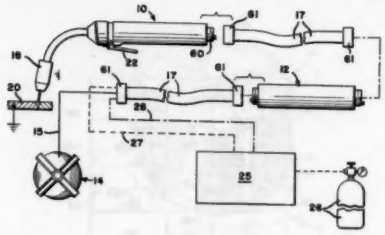


Apparatus for unloading festoons of tubed edible material, such as sausage, depending from hangers moving along a predetermined path. The apparatus includes a dislodger, responsive to the movement of the hangers, which urges the festoons of sausage laterally off of the hangers.

3,738,555
APPARATUS FOR MOVING WIRE
Donovan Karnes, and Marion F. Centliver, both of Troy, Ohio, assignors to Hobart Brothers Company, Troy, Ohio
Division of Ser. No. 40,189, May 25, 1970, abandoned. This application July 7, 1972, Ser. No. 269,721
Int. Cl. B65h 17/24
U.S. Cl. 226—168 **8 Claims**

An apparatus for moving cylindrical members, particularly welding wire, includes a rotary to linear actuator having an axially extending opening through which wire is fed, at least a pair of opposed rollers mounted on the actuator body, the axis of each being skewed or inclined relative to the direction of wire feed, which rotate with the body to impart a component of force to the wire to move it linearly through the actuator.

Each roller is carried by an arm pivotally mounted on the actuator body and each arm includes a centrifugal weight which forces the roller against the wire as the actuator is rotated. Biasing means, such as torsion bars or small springs assist in holding the rollers against the wire at low rotational speeds. The actuator may be rotated by a motor having an axiably extending opening through its armature through which the wire may be fed to the actuator.



3,738,556

APPARATUS FOR GUIDING A FOIL WEB

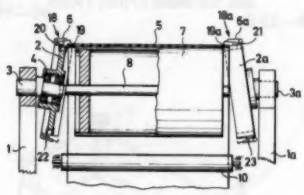
Ludwig Grebe, Wallau/Lahn, Germany, assignor to Kramer & Grebe KG Maschinen und Modellfabrik, Wallau/Lahn, Germany

Filed May 10, 1972, Ser. No. 251,915

Claims priority, application Germany, May 11, 1971, P 21 23 133.4

Int. Cl. B65h *17/34*

U.S. Cl. 226—173 2 Claims



A foil web of indefinite length is advanced in a taut condition along one part of its path of travel by a series of jaws clamped along both lateral edges of the web. The jaws are attached to the links of two endless chains disposed at either side of the web. Those terminal sprockets of the two chains that are at the run-in location of the web are slightly inclined to one another, so that the distance between the two said sprockets at the run-in side of the chains is slightly larger than at the run-off side. Between the two said sprockets there is rotatably held a web guiding drum which positions the running web at the height of the jaws as they run off the sprockets at the run-in side of the web.

3,738,557

TRANSFER DEVICE ON METAL PEELING MACHINES

Karl Gustav Weck, Solingen-Wald, Germany, assignor to Th. Kieserling & Albrecht Company, Solingen, Germany

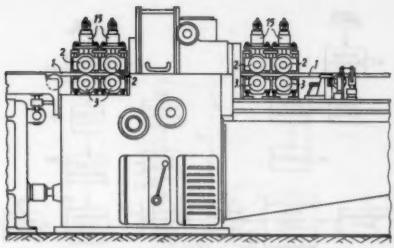
Filed Nov. 15, 1971, Ser. No. 198,893

Claims priority, application Germany, Nov. 13, 1970, P 20 55 888.7

Int. Cl. B65h *17/22*

U.S. Cl. 226—177 4 Claims

A workpiece transfer device on metal peeling machines, having pairs of driven rolls adapted for rotating opposite to each other and for adjustable radial movement in relation to the workpiece by means of double acting pistons. The rolls are frame mounted and the latter are connected together by mechanical coupling elements.



3,738,558

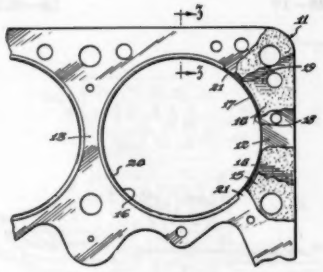
THIN LAMINATED GASKET

Otha Leroy Colwell, Mount Prospect, Ill., assignor to Felt Products Mfg. Co., Skokie, Ill.

Continuation-in-part of Ser. No. 756,908, Sept. 3, 1968, abandoned, which is a continuation-in-part of Ser. No. 458,833, May 17, 1965, abandoned, which is a continuation-in-part of Ser. No. 385,747, July 28, 1964, abandoned. This application Sept. 2, 1970, Ser. No. 68,935

Int. Cl. F16j *15/06*

U.S. Cl. 277—235 B 5 Claims



A thin gasket for high compression engines comprises two outer metal sheets of uniform thickness within a range of from 0.0055 to 0.0085 inch and a filler having a compressible section with a total thickness no greater than 0.015 inch. The compressible section of the filler may comprise one or two sheets of impregnated fibers, and if only one sheet is used, the filler may also include a thin metal shim of the same thickness as one of the outer sheets and is positioned between the upper surface of the filler sheet and the upper outer sheet. The bottom sheet has flanges bent over the outer edges of the upper sheet and they are compressed to provide a gasket of uniform thickness totaling less than 0.030 inch.

3,738,559

FLASH CUBE ASSEMBLY SYSTEM

William B. Tyndale, Waverly, Pa., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

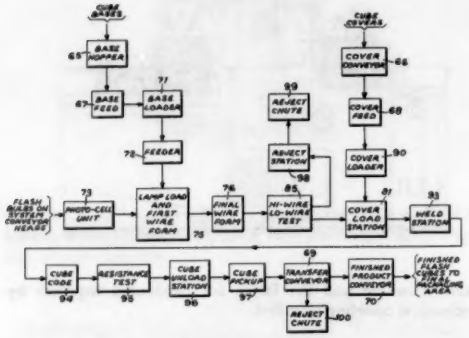
Filed July 23, 1971, Ser. No. 165,565

Int. Cl. B23k *1/06*

U.S. Cl. 228—1 7 Claims

This disclosure relates to a fully automated, electromechanical system designed to apply a plastic coating to in-

dividual flash bulbs and then assemble them into fully tested flash cube assemblies, each containing four bulbs. The system essentially is made up os separate subsystems: fluid transfer,



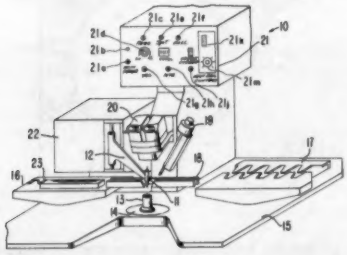
coating, and cube module. These subsystems are mounted on a system conveyor chassis which also contains monitoring devices to check conditions of the flash bulbs.

3,738,560

SEMICONDUCTOR DIE BONDER

Frederick W. Kulicke, Jr., and John J. Lepone, both of Philadelphia, Pa., assignors to Kulicke and Soffa Industries, Inc., Fort Washington, Pa.

Filed Dec. 8, 1970, Ser. No. 96,213
Int. Cl. B23k *1/14*
U.S. Cl. 228—10 **13 Claims**



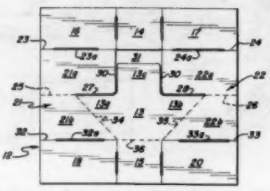
In a die bonder for use in bonding semiconductor dice to bonding pads, a plurality of dice to be bonded to bonding pads are placed in a first horizontal plane on a movable pedestal beneath a second horizontal plane in which the bonding pads are located. A die is picked up and transferred from a holding tray on the pedestal in the first horizontal plane to a bonding pad properly positioned in the second horizontal plane. The die to be picked up is properly located by placing it in a light beam from a spotlight. The bonding pad is contained on a support structure — typically a lead frame strip — which is automatically indexed along a heating rail such that once each cycle of machine operation a bonding pad is properly positioned to receive a die. The structure for picking up and transferring the die and the structure for moving the support structure along the heating rail are powered through five cams mounted on a single shaft which in turn is driven by a motor. The motor is shut off twice each bonding cycle for a selected but variable period of time to allow the bonding rate of the machine to be adjusted to operator proficiency.

3,738,561

SPACE DIVIDER

Terrill L. Nederveld, Neffsville, Pa., assignor to Packaging Corporation of America, Evanston, Ill.

Filed May 12, 1972, Ser. No. 252,600
Int. Cl. B65d *5/48*
U.S. Cl. 229—15 **10 Claims**



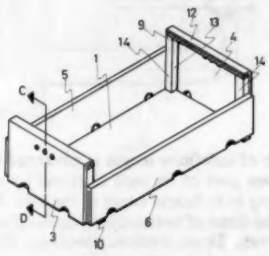
A space divider is provided which is formed from a single blank of sheet material. The divider is adapted to be used in combination with a container wherein the interior thereof is formed into a plurality of contiguous compartments. The divider will be automatically set up for disposition within the container by a simple folding manipulation.

3,738,562

STACKING BOX FOR TRANSPORTATION AND STORAGE OF FRUIT

Shlomo Jacques Schwarz, Sangre 9, Valencia, Spain

Filed June 7, 1971, Ser. No. 150,528
Claims priority, application Spain, July 16, 1970, 160,378; Oct. 6, 1970, 162,207; Oct. 7, 1970, 162,244
Int. Cl. B65d *13/00, 19/06*
U.S. Cl. 229—23 C **6 Claims**

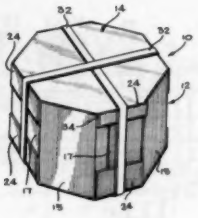


Stacking box for transporting and storing fruit made from sheets of cardboard or the like having reinforced sides with the stiffened front and back higher than the sides. Centering means for stacking are provided made from two rectangular shaped sheets transversely divided into three parts each crossing each other in assembly so that their respective middle zones which are of equal dimensions, are superimposed and folded in such a way that their ends are vertically located and related to each other by the stiffening bars in front and back. The superimposition of the middle parts is effected so that the part whose extremes are prolonged on the front and back remains on top. The stiffening bars in front and back may be prismatic slats whose bases are shaped in isosceles rectangle triangles which are joined by one of their faces defined between legs to the longitudinal borders of the ends which constitute the front and back, having the other face defined between legs facing outward.

3,738,563
CONTAINER

Stephen L. Elfrid, 641 61st Place, La Grange, Ill.

Filed Aug. 3, 1970, Ser. No. 60,431
Int. Cl. B65d *13/00*
U.S. Cl. 229—23 BT **6 Claims**

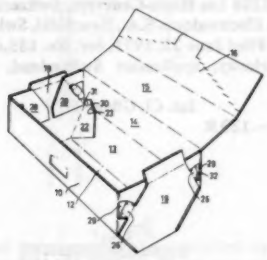


A container having a hollow tubular section of polygonol cross section with two end closure members each having a flat center section of the same shape and approximate size as the cross section of the tube and a plurality of tabs projecting from the periphery of the central section and interlocking with the end portions of the tube. In a method of assembling the container, some of the flaps of one end closure are inserted between portions of the contents prior to enclosure of the contents by the tube.

3,738,564
HEXAGONAL PACKAGE UNIT

Karl Rune Persson, Halmstad, Sweden, assignor to Sprinter Pack AB, Halmstad, Sweden

Filed Apr. 7, 1971, Ser. No. 132,089
Claims priority, application Sweden, Apr. 14, 1970, 5055/70
Int. Cl. B65d *5/26*
U.S. Cl. 229—36 **3 Claims**



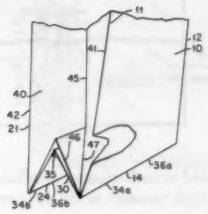
A hexagonal carton has six side panels and two end panels. One side panel forms a closure panel and the two panels adjacent thereto are connected with the end walls through a lost motion connection enabling said two panels to be raised to a position in which they are substantially parallel with each other when the closure panel is open.

3,738,565
FREE STANDING BAG

Kenneth E. Ackley, Pittsford, and William L. Courtney, Palmyra, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 10, 1970, Ser. No. 62,460
Int. Cl. B65d *33/10, 33/02*
U.S. Cl. 229—55 **18 Claims**

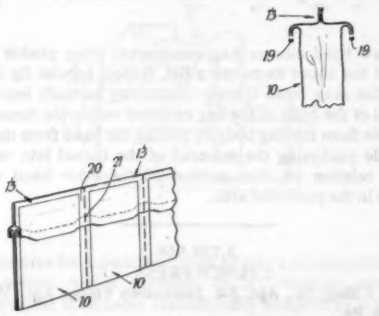
To provide a free standing bag of plastic material so that it will be useful as a grocery bag, a bag is formed folded with a triangular bottom insert to form a flat bottom having a central crease, the crease lines being pre-formed in the bag so that it can be erected and will have side walls completely free of creases; the side walls of the bags themselves are preferably embossed, striated, or quilted of double strength material, with embossing or quilted lines extending, preferably, in two vectorial directions with respect to the height of the bag so that the bag will have stiff, self-supporting free standing side walls and can be filled from the top without requiring any additional holders or supports.



3,738,566
FLEXIBLE PACKAGES

Norman Foster, Millbank, London S.W. 1, England, assignor to British-American Tobacco Company Limited, London, England

Filed Oct. 14, 1971, Ser. No. 189,147
Claims priority, application Great Britain, Oct. 19, 1970, 49,565/70
Int. Cl. B65d *33/16*
U.S. Cl. 229—62 **4 Claims**



A flexible pouch having an openable closure comprising a closure element arranged to close an opening in the pouch, at least one edge part of the opening being folded relative to the remainder of the body, and a seal for detachably sealing said one edge part of the opening by adhesion to at least one overlapping edge part of said closure element, the seal being produced by coating at least one of the surfaces where the seal is to be provided with an adhesive which is reactivatable by the application of heat and/or pressure.

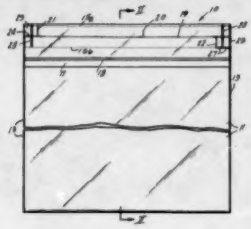
3,738,567
DRAW BAND CLOSURE BAG

Raymond J. Ruda, Chicago, Ill., assignor to Bagcraft Corporation of America, Chicago, Ill.

Filed Jaa. 19, 1970, Ser. No. 3,761
Int. Cl. B65d *33/16*
U.S. Cl. 229—62 **17 Claims**

A bag made from pliable sheet material has about its mouth a flat, folded, tubular lip tunnel with a flat draw band therein comprising only flexible sheet material. The draw band is

adapted to be grasped at a tunnel opening to pull the draw band partially through the opening and to draw the tunnel



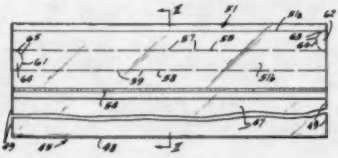
area into puckered mouth-closing relation on that portion of the draw band which remains in the puckered area.

3,738,568

BAG WITH DRAW BAND SEPARABLY INTEGRAL WITH BAG BODY

Raymond J. Ruda, Chicago, Ill., assignor to Bagcraft Corporation of America, Chicago, Ill.

Filed Jan. 6, 1971, Ser. No. 104,414
Int. Cl. B65d *33/16*
U.S. Cl. 229—62 **16 Claims**



A draw band closure bag constructed from pliable sheet material has about its mouth a flat, folded, tubular lip tunnel with a flat draw band therein comprising partially separated material of the body of the bag enclosed within the tunnel and separable from the bag body by pulling the band from the tunnel while puckering the material of the tunnel into mouth-closing relation on that portion of the draw band which remains in the puckered area.

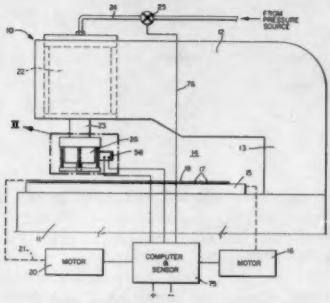
3,738,569

PUNCH PRESS

John S. Killaly, Sr., Apt. J-4, Jamestown Village Apt., Willow Grove, Pa.

Filed Nov. 30, 1970, Ser. No. 93,612
Int. Cl. B26f *1/04*
U.S. Cl. 234—43 **14 Claims**

A punch press is provided, wherein the punch cylinder head carries a plurality of punches, such that, as the cylinder head is moved downwardly toward the workplate or table, to engage the work, all of the punches descend with the cylinder head, but with only one of the punches being normally actuated to perform a punching operation, with the remaining punches carried by the cylinder head being retractable upon engaging the workpiece. A solenoid may be used to actuate a punch that is to work, by moving a "key" or "gag" into position behind the punch that is to be used. The punch that is to be fixed against retraction may be automatically operated, as by being programmed from a computer, which selects a given punch to perform a given operation, depending upon cards or tapes that are programmed into the computer to control the same, with the computer or similar control device also controlling the movement of the workpiece, and by controlling the movement of the worktable or workplate. For more complex operations, in which many different types of holes would be desired in a given workpiece for example, a plurality of cylinder heads (for example six or more), may be utilized in a bank, each with a plurality of punches carried thereby and operated in the manner discussed above. However, this latter system generally utilizes a two-stage selection device, whereby one selection is operative by actuating hydraulic valves or the like for controlling the downward movement of one of the six or more



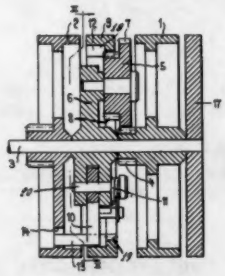
cylinder heads, with the other stage comprising the actuation of one of the punches carried by the cylinder head to be utilized, by moving a "key" or "gag" behind the punch as aforesaid. In the two-stage device of this invention, the computer will usually effect both selections, as well as the workplate motion, generally based upon such parameters as minimizing workpiece motion and the like.

3,738,570

NUMERICAL COUNTER WITH COAXIAL DISPLAY DRUMS

Paul Vogt, 2208 Les Hauts-Geneveys, Switzerland, assignor to Ebauches Electroniques S.A., Neuchatel, Switzerland

Filed June 21, 1971, Ser. No. 155,447
Claims priority, application Switzerland, July 7, 1970, 10263/70
Int. Cl. G06c *15/26*
U.S. Cl. 235—133 R **7 Claims**



A numerical counter having coaxial drums, wherein a driving drum entrains a planet wheel pivoted on a planet wheel carrier and rolling inside a fixed sun wheel, the device being such that when the driving drum turns in a predetermined direction it turns the planet wheel carrier, a resilient member is primed gradually and then abruptly drives a subsequent drum.

3,738,571

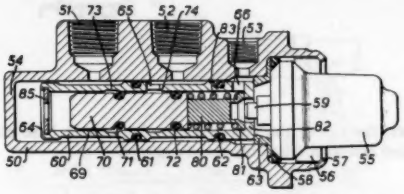
WAX CAPSULE VALVES

Arthur Ernest Henry Elmer, Painswick, England, assignor to Dynair Limited, Nailsworth, Gloucestershire, Great Britain

Filed May 21, 1971, Ser. No. 145,846

Int. Cl. G05d *23/275*

U.S. Cl. 236—100 **3 Claims**



A thermostatic valve in a pneumatic control for a clutch in a cooling fan drive has a sliding spool and two inner valve plungers to connect an actuating ram in the fan hub either to pressure or relief, the clutch being normally engaged by spring pressure. If the supply pressure falls the valve automatically shuts off the pressure to the fan and the fan clutch engages positively by the spring action.

3,738,572

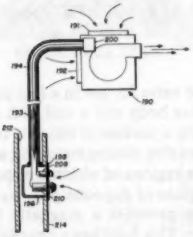
AIR FLOW CONTROL SYSTEM

William K. Hall, Jr., 4539 Bobbitt, Dallas, Tex.

Continuation-in-part of Ser. No. 636,748, May 8, 1967, Pat. No. 3,669,349, which is a continuation-in-part of Ser. No. 577,298, Sept. 6, 1966, abandoned. This application Dec. 30, 1971, Ser. No. 214,350

Int. Cl. F24f *11/00*

U.S. Cl. 236—49 **8 Claims**



Environmental temperatures are controlled by selectively proportioning air flow from a pair of air flow paths by generation of a force proportional to temperature and dependent solely upon temperature for oppositely and proportionally changing registration of small openings in pairs of perforated plates laterally disposed in the air flow paths. A direct-acting, expandible-material, temperature-sensitive device is located adjacent those perforated plates and is used to generate that force; and a remote-control system permits the set point of that temperature-sensitive device to be adjusted.

3,738,573

EXPANSION VALVE

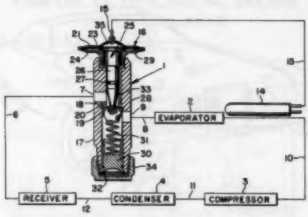
John T. Eschbaugh, Chesterland, and Darwin R. Grahl, Novelty, both of Ohio, assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Feb. 18, 1971, Ser. No. 116,551

Int. Cl. F25b *41/04*

U.S. Cl. 236—92 B **4 Claims**

An expansion valve for a compression refrigerating system characterized in that the valve member thereof which controls the flow of refrigerant from the condenser to the evaporator has a stem portion on the inlet side of the seat which pressure balances the refrigerant pressure in the inlet port of the valve so that it is ineffective to tend to move the valve member either in opening or closing direction.



3,738,574

APPARATUS FOR ATOMIZING FLUIDS WITH A PIEZOELECTRICALLY STIMULATED OSCILLATOR SYSTEM

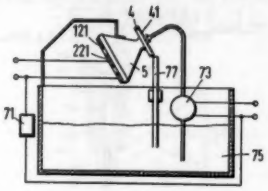
Max Guntersdorfer, Munich, and Walter Heywang, Neukeferloh, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 30, 1971, Ser. No. 158,473

Claims priority, application Germany, June 15, 1971, P 21 29 665.1

Int. Cl. B05b *3/14*

U.S. Cl. 239—102 **8 Claims**



Apparatus for atomizing liquids having a piezoelectric oscillator system which includes an AC voltage stimulated piezoelectric transducer mechanically coupled to a vibrator plate for inducing bending vibrations therein, a fluid tank and a pump for delivering fluid to the vibrating plate which is disposed at an oblique angle with respect to the force of gravity above the tank, a wick extending from the tank with one end thereof in proximity to the lower edge of the vibrating plate to aid in diverting excess liquid from the plate, and means for controlling operation of the fluid delivery system for deactivating the same during periods when the oscillator system is inactive.

3,738,575

AUTOMATIC WINDSHIELD WASHER RESERVOIR FILLING AND MIXING MEANS

Albert Somer, 124 North 7th Street, New Hyde Park, N.Y.

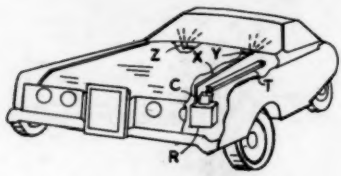
Filed Nov. 22, 1971, Ser. No. 200,887

Int. Cl. B60s *1/50*

U.S. Cl. 239—284 **1 Claim**

Automatic windshield washer means for a vehicle of the type having a reservoir and spray nozzles. Means are provided to collect rain water and car wash water from the outer surface of said vehicle and means to feed said collected water to

said reservoir. Control valve means are connected to said reservoir and said collecting means. The valve means has



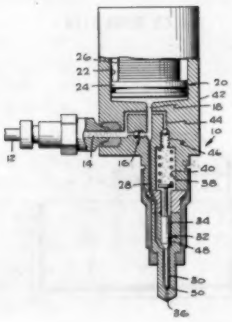
means to trap sediment and add cleaning agents to the collected water.

3,738,576

INJECTION NOZZLE FOR DIRECT INJECTION ENGINE

Cormac G. O'Neill, Layfeyette, Calif., assignor to Physics International Company, San Leandro, Calif.

Filed Apr. 21, 1971, Ser. No. 135,930
Int. Cl. F04b 7/04
U.S. Cl. 239—533 5 Claims



An improved needle valve spring apparatus for a fuel injection assembly of the type wherein pressured fuel from a supply conduit is pumped at each cycle to a needle valve which opens to allow the pumped fuel to enter the combustion cylinder. The spring chamber that supplies spring force to the needle valve member to normally keep it closed, and that heretofore contained only a coil spring, is filled with pressured fuel that acts as a spring. The spring chamber is sealed against the outflow of fuel therefrom, and a passage with a check valve therein connects the pressurized fuel supply line to the spring chamber to fill the spring chamber with pressurized fuel when the engine is started.

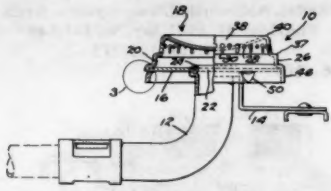
3,738,577

BURNER STRUCTURE

Eugene J. Blanzy, and Donald E. Duperow, both of Bloomfield Hills, Mich., assignors to Lincoln Brass Works, Inc., Detroit, Mich.

Filed July 19, 1971, Ser. No. 163,620
Int. Cl. B05b 1/14
U.S. Cl. 239—568 12 Claims

Burner for domestic gas ranges has alternate small burner ports and larger key-hole shaped burner ports; has inverted cup shape with downwardly dished top wall for cooling purposes; the rim of the cup being anchored to a base plate by lanced and struck-in portions of a flange.

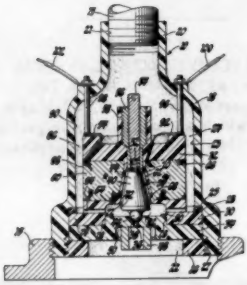


3,738,578

PERMANENT MAGNET ARMATURE VALVE

John M. Farrell, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 4, 1971, Ser. No. 186,177
Int. Cl. B05b 1/32
U.S. Cl. 239—585 3 Claims



A solenoid-type valve for use in a fuel injection system has a non-magnetic valve body and a coil with an axially extending non-magnetic core, a portion of which is tapered. Translatable within the core is valve means including a permanent magnet armature, the pole regions of which are spaced generally proximate the pole regions of opposite polarity of the coil. The coil upon energization provides a magnetic field that builds up rapidly in the core. This field has a density which increases axially from one pole region at the wide end of the core to a pole region of opposite polarity at the small end. The valve means is normally biased to a closed position when the coil is deenergized, and the field of the coil when energized cooperates with the permanent magnet armature to immediately effect a force to translate the valve means in the direction of increasing field density to an open position.

3,738,579

COMBINATION MANURE LOADER AND SPREADER

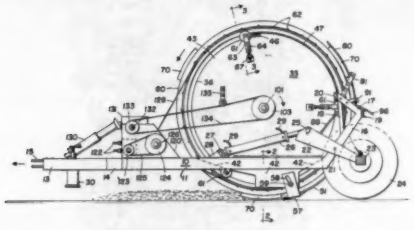
Robert E. Bretz, R. R. No. 2, Coggon, Iowa

Continuation of Ser. No. 73,434, Sept. 18, 1970, abandoned.
This application Dec. 13, 1971, Ser. No. 207,241
Int. Cl. A01c 3/06, 7/08
U.S. Cl. 239—651 22 Claims

A combination manure loading and spreading machine employs a drum-shaped container, horizontally mounted transversely of the direction of travel of the machine, on a tractor drawn wheeled frame. The drum is movable between lower and upper positions relative to the ground. When in its lower position, a scoop beneath the drum picks up the manure as the machine travels and an assembly of blades revolving concentrically about the drum carries the manure up from the scoop and dumps it into the drum through an upper opening therein.

When the drum is later raised to its upper position and the machine driven off to a field, a flail assembly in the drum unloads the manure, both the blade and the flail assemblies being alternately power driven from the tractor.

The flail assembly itself is improved by the provision of a pair of discs adjacent individual flails and spaced inboard from the ends of the flail drive shaft one quarter the length of the



latter. The discs are provided with a pair of large notches in their rims and a pair of rigid arms is pivoted adjacent the rim of each disc at diametrically opposite locations, the arms being fitted with short lengths of chain flail. The discs, arms and short flails cut initial paths through the manure in the drum so that the other flails get into operation more quickly and easily.

3,738,580

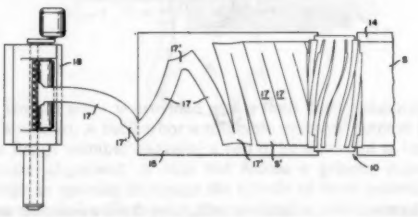
METHODS OF PROCESSING UNCURED RUBBER AND LIKE RAW MATERIALS, AND ARTICLE THEREFOR

Wilbur E. Harris, Indianapolis, Ind., assignor to Uniroyal, Inc., New York, N.Y.

Division of Ser. No. 65,673, Aug. 20, 1970, which is a continuation of Ser. No. 537,474, March 25, 1966, abandoned. This application Feb. 24, 1972, Ser. No. 229,072

Int. Cl. B02c *23/02*

U.S. Cl. 241—30 **10 Claims**



The processing of uncured rubber or like raw material, which is normally produced, stored and shipped in sheet form but which is to be subjected to a continuous and uniform strip feeding into an extruder, mill or like treating apparatus, is disclosed. For this purpose, there is provided in a sheet of such material a plurality of slits extending across the sheet and spaced from each other longitudinally of the sheet, the slits in an alternating sequence starting at the opposite side edges of the sheet and each terminating short of the respective other side edge of the sheet. When one end portion of the slit sheet is introduced into the bite of the apparatus, the sheet is subjected to a pulling force and separates along the slits into a continuous zig-zag strip. Apparatus for slitting the sheet in the indicated manner is also disclosed. This abstract is not to be taken either as a complete exposition or as a limitation of the present invention, however, the full nature and extent of the invention being discernible only by reference to and from the entire disclosure.

3,738,581

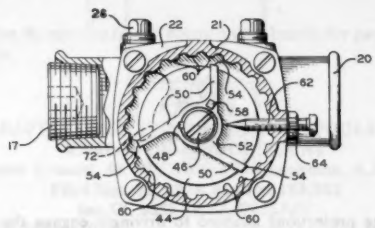
MACERATING PUMP WITH MEANS FOR PREVENTING BLOCKAGES

Alfred P. Gallauresi, Solvay, and Walter V. Kurgan, Manlius, both of N.Y., assignors to Oberdorfer Foundries, Inc., Syracuse, N.Y.

Filed Oct. 12, 1971, Ser. No. 188,048

Int. Cl. B02c *18/40*

U.S. Cl. 241—46.02 **14 Claims**



A pump including means at the inlet for grinding maceratable solids into a pumpable slurry. One or more stripper picks or sharp projections extend radially inward adjacent the inlet side of a rotating grinder wheel having a sharp edged boss projecting outwardly to rotate in close proximity to the stationary point of the pick, thereby preventing rotational blockage by sewage masses entwining on the rotating wheel or stationary blockage to flow in advance of the wheel.

3,738,582

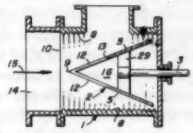
APPARATUS FOR COMMINUTING, SEPARATING, MANIPULATING AND PUMPING MATERIALS

Georg Neidl, IM Bisch 664, Schaan, Liechtenstein

Filed Nov. 18, 1971, Ser. No. 199,964

Int. Cl. B02c *13/10*

U.S. Cl. 241—46.11 **22 Claims**



Apparatus for pumping and comminuting, and otherwise treating viscous and semi-solid materials includes a housing having an axial inlet and tangential outlet and a rotor in the housing having at least one semi-cylindrical blade disposed at an angle to the axis of rotation, the straight edge of the blade facing the inlet and having a medially disposed recessed cut out portion to prevent back-up and jamming of materials.

3,738,583

APPARATUS FOR MIXING, BLENDING, LIQUIFYING OR CHOPPING

Abram Berland, and Moises Berland, both of Rua Barra do Tibagi, 258 - Bom Retiro, Sao Paulo, Brazil

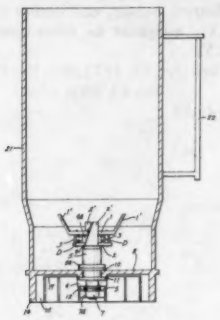
Filed Feb. 22, 1971, Ser. No. 117,427

Int. Cl. A47j *43; B02c 18/12*

U.S. Cl. 241—46.17 **8 Claims**

An improved apparatus for liquefying, mixing and blending material, particularly foods, including a cup-shaped receptacle adapted to be mounted on a base containing a drive motor therein. The bottom wall of the receptacle has an opening therein, and a drive shaft extends through the opening and is sealingly engaged with the bottom wall. The lower end of the drive shaft is adapted to be releasably coupled to the drive motor. The upper end of the shaft has a blade set non-rotatably but removably connected thereto and positioned within the in-

terior of the receptacle. The blade set includes two vertically spaced blades connected by pins. The drive shaft has radially



extending projections adapted to drivingly engage the connecting pins of the blade set.

3,738,584

DEVICE IN STRIKING CUTTERS

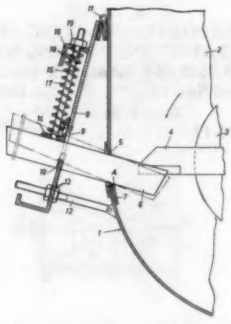
Sven Jorgen Gerhard Gronberg, Ottum L6, Kvanum, Sweden

Filed Oct. 16, 1970, Ser. No. 81,414

Claims priority, application Sweden, Oct. 17, 1969, 14248/69

Int. Cl. B02c *13/06*

U.S. Cl. 241—190 **5 Claims**



A striking cutter for disintegrating crops or the like in which a rotor having radially projecting knifearms which, during rotation, pass between a plurality of counterknives detachably arranged in a row on a holder, with the holder being pivotably suspended in the rotor housing and the counterknives being pivotably journalled and supported by a rest thereby enabling the counterknives to be partly or totally disengaged from the knifearms of the rotor.

3,738,585

CHOPPER FOR MEAT AND OTHER FOODS

Abram Berland, and Moises Berland, both of Rua Barra do Tibagi, 258-Bom Retiro, Sao Paulo, Brazil

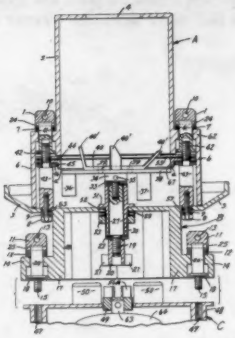
Filed Apr. 5, 1971, Ser. No. 131,127

Claims priority, application Brazil, Apr. 6, 1970, 218,032

Int. Cl. B02c *18/02*

U.S. Cl. 241—186 R **12 Claims**

An improved apparatus particularly for grinding or chopping food products, such as meat, coffee and the like. The apparatus includes a vertically extending receptacle open at its upper end for permitting material to be deposited therein. A rotatable knife assembly is disposed within the receptacle and cooperates with a replaceable control ring which surrounds the knife assembly for defining a narrow annular flow passage therebetween. The width of the flow passage can be varied by using different control rings to permit variation in the size of the ground or crushed material. The



knife assembly has pushing blades extending downwardly therefrom for permitting the crushed material to be pushed into a discharge chute. In a variation of the invention, a double knife assembly can be utilized for permitting grinding or chopping in two separate stages.

3,738,586

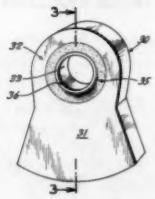
IMPROVED HAMMER FOR HAMMER MILLS

Herman A. Fabert, Jr., Homewood, Ill., assignor to Abex Corporation, New York, N.Y.

Filed July 14, 1971, Ser. No. 162,358

Int. Cl. B02c *13/28*

U.S. Cl. 241—195 **2 Claims**



A hammer for a hammer mill, cast from austenitic manganese steel, is cast with a pad of extra metal surrounding the eye, the extra metal being work hardened to inhibit stretching of the eye when the hammer is revolved with its supporting rod which fits the eye diameter.

3,738,587

APPARATUS FOR FEEDING AND SPLICING TAPE-SHAPED MATERIALS

Athos Cristiani, Bologna, Italy, assignor to AMF Incorporated, White Plains, N.Y.

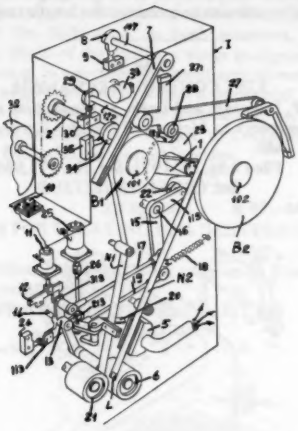
Filed May 4, 1971, Ser. No. 140,197

Int. Cl. B65h *19/18, 19/08*

U.S. Cl. 242—58.1 **1 Claim**

Apparatus for providing a continuous feed of taped shaped material, which comprises a first bobbin having tape thereon for unwinding, a second bobbin having tape thereon for unwinding, means for monitoring the tape remaining on the first bobbin as it is unwound, means for severing the tape being unwound from the first bobbin after the sensing of a predeter-

mined tape level on the first bobbin by the monitoring means, and means for joining the leading end of the tape from the

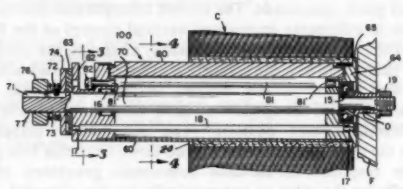


second bobbin to the tape from the first bobbin at a point forward of the point of severence thereof.

3,738,588
CALIBRATED TENSION ARBOR

Clifton E. Ayers, New Whiteland, Ind., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Aug. 13, 1971, Ser. No. 171,531
Int. Cl. B65h *19/02, 75/34, 23/08*
U.S. Cl. 242—68.3 **10 Claims**



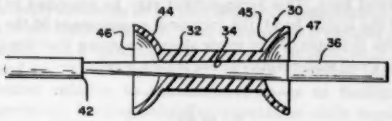
A tension arbor is provided with a shaft fixedly maintained into a support. A shell arbor is rotatable mounted thereon having a flange member engaging a coil to be unwound to insure accurate alignment. A cam rod forces a gripper member through an opening to engage the spindle of sheet material to be unwound. A coiled spring urges a friction plate to engage a face plate so that repeatable tension is achieved during each unwinding. The amount of tension can be dialed for ease in operation.

3,738,589
REEL FOR WATER SKIING

Theron R. Brayman, 1796 Ascott Road, Juno Isles, Fla.

Filed Sept. 10, 1971, Ser. No. 179,301
Int. Cl. B65h *75/40*
U.S. Cl. 242—96 **3 Claims**

A reel for winding, storing and paying out a tow line used for water skiing includes a handle integrally molded to a spool. The handle extends outwardly from one of first and second flanges molded to a central body to form the spool. Each flange portion includes a portion which tapers from the maximum diameter of the flange to the central body portion thereby proving means for evenly winding the line on the spool. In another embodiment the spool has a tapered bore that cooperates with a tapered handle on which the spool is mounted. In one position on the handle the handle engages the spool in an interference fit to lock it in position. In another

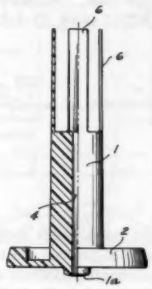


position the spool is free to rotate on the handle for paying out the line.

3,738,590
ADAPTER FOR FITTING OVERSIZED SPOOLS OF THREAD ON A SPOOL MOUNT

Salvatore Granati, 48 17th Avenue, Ronkonkoma, N.Y.

Filed Sept. 23, 1971, Ser. No. 183,062
Int. Cl. B65h *49/02*; **D03j** *5/08*
U.S. Cl. 242—130 **3 Claims**

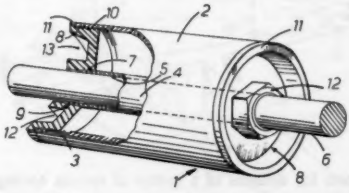


An adapter for large-sized spools of thread having a correspondingly large center hole permits attachment of such spools to a spool pin the diameter of which is too small for receiving such spools and satisfactorily guiding the same. The adapter has a center hole dimensioned to coact with the spool pin as generally provided on domestic sewing machines and an outer configuration capable of accommodating the center hole of industrial spools and other similarly sized spools and of retaining such spools with a tight fit.

3,738,591
TEXTILE BOWL AND THE LIKE

Anthony George Melluish, Green Crawley, Sussex, England, assignor to Langley London Limited, Crawley, Sussex, England

Filed Nov. 11, 1971, Ser. No. 197,727
Claims priority, application Great Britain, June 4, 1971, 19,015/71
Int. Cl. B65h *54/46*
U.S. Cl. 242—18 DD **11 Claims**



A textile bowl is clamped onto a carrier shaft by a sleeve secured within the bowl and which is a sliding fit on the shaft. An end-cap has a conical bore, the wider end of which

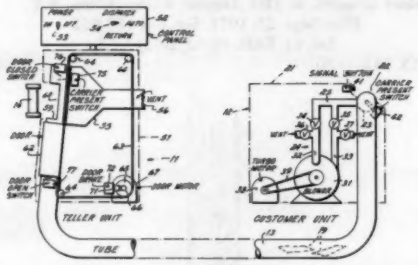
receives a deformable end of the inner sleeve. Screwing home the end-cap onto the textile bowl causes the deformable end to be urged inwards thereby clamping it around the shaft, by the conical bore. This arrangement may be provided at both ends of the textile bowl, the frictional engagement of the end-caps with the ends of the inner sleeve ensuring that the inner sleeve is fixed with respect to the textile bowl.

3,738,592

LOOSE DOCUMENT RETRIEVAL FOR PNEUMATIC CARRIER BANK TELLER SYSTEM

Douglas G. Smith, Pompton Lakes; Zoltan Gagyi, Bloomfield, and Donald Ross, Hawthorne, all of N.J., assignors to The Mosler Safe Company, Hamilton, Ohio

Filed Oct. 7, 1971, Ser. No. 187,315
Int. Cl. B65g *51/32*
U.S. Cl. 243—19 **12 Claims**



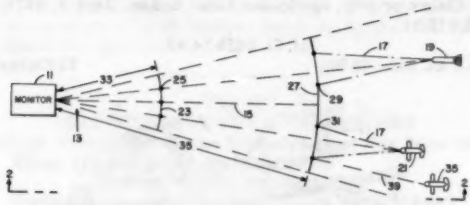
Pneumatic conveyor bank teller systems are usually provided with a safety door to protect the teller from an arriving document carrier. Automatic controls release the door only when the carrier has arrived at the teller station or prevent operation of the system when the door is opened. The invention provides for the blowing back toward the teller of loose documents, inadvertently deposited in the tube by a customer, through an alternative mode of operation which functions with the carrier absent from the system and with the teller door opened. The specific embodiment minimizes the chance of teller injury through inadvertent use of the alternative mode with the carrier in the system.

3,738,593

SECTOR DEFENSE SYSTEM

Francis W. Duvall, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 16, 1971, Ser. No. 163,491
Int. Cl. F41g *7/00*
U.S. Cl. 244—3.14 **3 Claims**



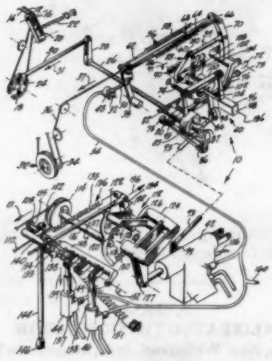
A system for defense of a sector of terrain having targets therein disposed to emit rays including friendly targets disposed to transmit IFF signals and hostile targets. The system includes a monitor for sweeping the atmosphere of the sector with rays for reflection from targets and stations for receiving the emitted rays and the reflection for computation of triangulation and doppler information and the IFF signals and for transmitting appropriate signals for monitor selection of and transmission to the launchers of signals for firing the corresponding missiles to intercept the hostile targets.

3,738,594

LIFT CONTROL MECHANISM

Bradford P. Donovan, and Lorin A. Wood, both of Lakewood, Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Aug. 16, 1971, Ser. No. 171,989
Int. Cl. B64c *13/18, 13/30*
U.S. Cl. 244—76 R **14 Claims**



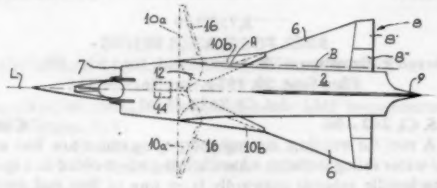
A controlling mechanism for a direct lift control system which is utilized primarily during the landing phase of aircraft flight to reduce the response time of the aircraft to longitudinal or pitch commands. The system incorporates modulated spoilers to effectuate augmented vertical control of the flight path of the aircraft without necessarily changing the pitch attitude thereof. When the aircraft is preparing to land and the flaps are placed at the desired landing flap angle, the mechanism raises the spoilers on each wing symmetrically to a predetermined bias position. The mechanism thereafter causes the spoilers to operate up and down from this bias position in response to elevator commands generated either manually by the pilot or automatically by the autopilot. The mechanism also includes means to disengage the system automatically during stalls, go-arounds, landing rollout, or manually whenever the pilot desires.

3,738,595

DELTA-WING AIRCRAFT

Joseph Bouchnik, Mashay Mismeret, Gush Tel-Mond, Israel

Filed Oct. 12, 1970, Ser. No. 79,740
Claims priority, application Italy, Oct. 14, 1969, 33185/69
Int. Cl. B64c *3/56*
U.S. Cl. 244—43 **4 Claims**



A delta-wing aircraft comprises a pair of auxiliary wings pivotably mounted forwardly of the leading edge of the delta-wing from a deployed position at lower speeds wherein they increase lift and also act as horizontal stabilizers, to a retracted drag-decreasing position at cruising speeds. In one

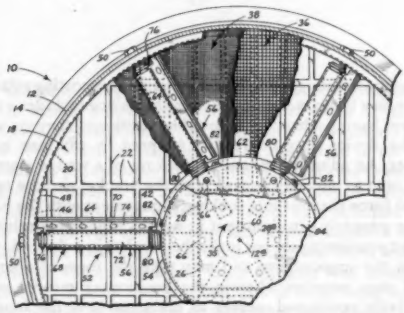
described embodiment, the auxiliary wings are pivotable about a vertical axis of the aircraft from a deployed position wherein their leading edges are about 90° to the longitudinal axis of the aircraft, to a retracted position wherein they form the apex of the delta-wing; in both positions, the mean aerodynamic chord of the auxiliary wings is aligned with that of the delta-wing. In a second described embodiment, the pair of auxiliary wings are pivoted about a horizontal axis of the aircraft, from a deployed position substantially perpendicular to the longitudinal axis of the aircraft, to a retracted position substantially flush with the aircraft fuselage.

3,738,596

APPARATUS FOR BREAKING UP A DEHYDRATED FOOD MASS

Thomas R. Miles, Portland, Oreg., assignor to Foamat Foods Corp., Corvallis, Oreg.

Filed Dec. 23, 1971, Ser. No. 211,270
Int. Cl. B02c *23/00*
U.S. Cl. 241—95 **7 Claims**



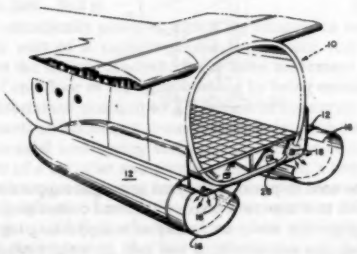
Apparatus for breaking up a mass of a dehydrated food product into smaller, substantially uniformly sized particles. The apparatus includes a screen on which such a mass is deposited, and an elongated resilient power-driven wiper blade which wipes over the surface of the screen to engage any mass thereon, and to press it through the screen.

3,738,597

AIRCRAFT UNDERCARRIAGE

T. Desmond Earl, Buffalo, and Vincent B. Paxhia, Kenmore, both of N.Y., assignors to Textron Inc., Providence, R.I.

Filed Jan. 4, 1971, Ser. No. 103,756
Int. Cl. B64c *25/00*; B60v *3/08*
U.S. Cl. 244—102 R **7 Claims**



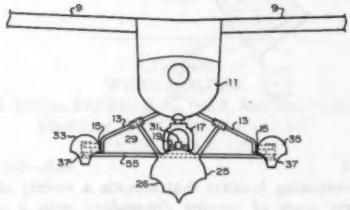
A pressure-air activated type undercarriage system for aircraft such as shown in U.S. Reissue Pat. No. 26,812, comprising in combination; an inflatable trunk member carried under the aircraft fuselage, and a source of compressed air (or other fluid) in conjunction therewith; the trunk being jet-apertured along the footprint area thereof to provide a fluid-film lubricated undercarriage system when operating in one mode; and a secondary load supporting, fluid-tight, variably inflatable bladder or bladders disposed interiorly of the trunk and selectively inflatable to various degrees independently of inflation of the trunk member. Thus the aircraft is capable of being "parked" on a solid or fluid "airport" surface; or it may be caused to "kneel" or "squat" in any preferred attitude or elevation relative to the surface, so as to facilitate passenger/cargo loading/unloading operations while requiring no continuing compressed fluid supply to the undercarriage system. Adjunctively, the inner bladder may be pilot-inflated to any desired degree, and then maintained in such inflated condition by simply closing an appropriate valve in the control system; whereby the airplane undercarriage is then operable in floatation mode although the compressed air supply engine(s) of the craft may be shut down.

3,738,598

AMPHIBIOUS APPARATUS FOR CONVENTIONAL LAND AIRCRAFT

Wallace K. Larkin, 74 Hollins Drive, Santa Cruz, Calif.

Filed Apr. 10, 1972, Ser. No. 242,417
Int. Cl. B64c *25/54*
U.S. Cl. 244—105 **8 Claims**



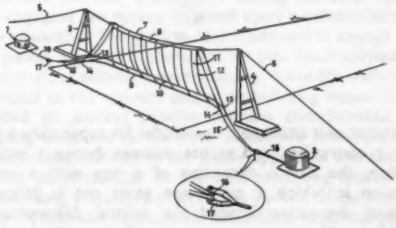
An improved float assembly is adapted to conveniently attach to the existing landing gear of a conventional land-type aircraft and includes a centrally positioned primary float structure which attaches to the existing landing gear struts and includes secondary or stabilizing float structures which attach to the existing axles for the ground-engaging wheels of the landing gear. Directional control for steerage while waterborne is aided by a water rudder on the primary float which is operated from the steering mechanism of the conventional landing gear.

3,738,599

AIRCRAFT BARRIER NET

Leif Mathias Borehag, Norrkoping, Sweden, assignor to Borgs Fabricks AB, Norrkoping, Sweden

Filed Oct. 23, 1970, Ser. No. 83,438
Claims priority, application Sweden, Nov. 14, 1969, 15625/69
Int. Cl. B64f *1/02*
U.S. Cl. 244—110 C **4 Claims**



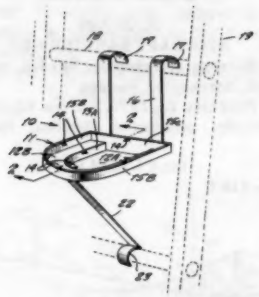
An aircraft arresting means comprising a barrier net composed of horizontal bands joined by a plurality of vertical

bands, the net having band ends which include loops that pass around pins forming part of a coupling to brakes to which ends of the bands are connected. The loops sliding around the pins cause adjustment of the net, when contacted by an aircraft so that a uniformly distributed load is obtained on all of the activated bands of the net.

3,738,600
UNIVERSAL MOUNTING BRACKET
Bruce Melvin Harper, 213 Arbor Valley Center, San Jose, Calif.
Filed Apr. 30, 1971, Ser. No. 139,036
Int. Cl. B62b *1/02*
U.S. Cl. 248—121 1 Claim

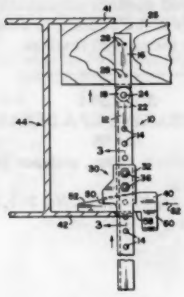
A self-adjusting bracket that mounts a variety of plastic baby carry seats of varying dimensions onto a portable, lightweight stroller.

3,738,601
PAINT POT HOLDER
Lyle P. Gehringer, 1010 Spencer Street, Longmont, Colo.
Filed Feb. 28, 1972, Ser. No. 229,639
Int. Cl. E06c *7/14*
U.S. Cl. 248—210 1 Claim



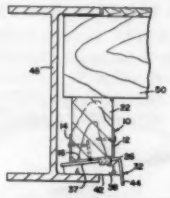
A bracket unit attachable to a ladder for supporting a paint pot in a convenient and secure manner during a painting operation; the device consisting of a tray with a central depression in which a quart size paint pot is placed, a peripheral depression around the central depression for receiving a gallon size paint pot, a pair of upstanding hooks attachable around a ladder upper rung and a detachable angularly downward brace attachable on a ladder lower rung.

3,738,602
JOIST SUPPORTING DEVICE
Alan P. Arnett, 3050 Ravenwood Road, Fort Lauderdale, Fla.
Filed June 30, 1971, Ser. No. 158,155
Int. Cl. E04g *3/00*; A47g *29/02*
U.S. Cl. 248—228 10 Claims



A device for supporting a joist in weight supporting relation relative to a beam member, wherein the device includes a support arm having a bracket adjustably positioned thereon such that the device may be readily adapted to any size beam member. An adjusting means in the form of a wedge member is arranged to movably engage both the bracket and the beam so as to force the joist into locking engagement with the beam thereby properly positioning it in weight supporting relation. Bracket positioning means locks the bracket in a desired position on the support arm and may take the form of a spring biased stop member wherein the positioning means, when operatively positioned, serves to maintain both the bracket and wedge means in locked position relative to the support arm and beam member respectively.

3,738,603
JOIST SUPPORTING DEVICE
Alan P. Arnett, 3050 Ravenswood Road, Fort Lauderdale, Fla.
Continuation-in-part of Ser. No. 99,003, Dec. 17, 1970, abandoned. This application Aug. 4, 1971, Ser. No. 168,890
Int. Cl. E04g *3/00*; A47g *29/02*
U.S. Cl. 248—228 8 Claims



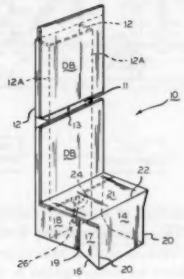
A device used to position the joist in weight supporting relation relative to a concrete pour or slab and comprising a shoe which engages the lower extremity of a supporting leg which in turn engages and positions the joist in weight supporting relation. A wedge member is movably positioned in supporting engagement with the bottom of the shoe and is maintained in movable engagement therewith by means of a bracket integrally formed on the shoe. Positioning the wedge in a sandwiched-like fashion between the shoe and a lower flange of a supporting beam or the like serves to maintain the leg in proper position relative to the joist.

3,738,604

FOLDABLE SUPPORT STRUCTURE

Robert J. Howlett, Elizabeth, and Ronald H. Miller, Somerville, both of N.J., assignors to Container Corporation of America, Chicago, Ill.

Filed Apr. 24, 1972, Ser. No. 246,943
Int. Cl. A47b 97/00
U.S. Cl. 248—459 1 Claim



A self-supporting foldable support structure comprises a vertical standard having a main panel and a pair of stiffener ribs extending longitudinally in planes generally normal to the plane of the vertical standard and in the nature of an easel. Structure is provided for causing the stiffener ribs to move to stiffening position in the nature of a platform for the display of articles in front of the vertical standard. Said structure comprises a front wall spaced from the vertical standard with a foldable wall extending from each end of the front wall and toward the vertical standard. Each foldable wall consists of hingedly connected wall portions, one of same being secured to a correlative stiffener rib and the other being hingedly connected to a correlative end of the front wall. The platform panel is hingedly connected to the front wall, and resilient means are connected between the platform panel and the vertical standard and are arranged to bias the platform panel to a position resting upon the tops of the foldable walls and tending to straighten the line of fold between the wall portions and thereby move the stiffener ribs to stiffening position.

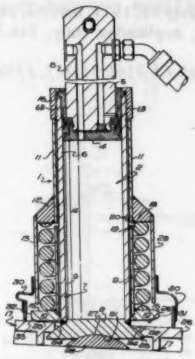
3,738,605

MINE ROOF SUPPORTS

David Beaumont Smith, Wakefield, Yorkshire, England, assignor to Fletcher Sutcliffe Wild Limited, England

Filed Oct. 27, 1971, Ser. No. 193,046
Claims priority, application Great Britain, Oct. 2, 1970, 46,858/70
Int. Cl. E21b 15/30
U.S. Cl. 248—354 H 15 Claims

An hydraulically powered chock leg adapted to support or to form part of a support means for a mine roof accommodates the natural tendency for relative movement between the roof and floor of the mine working by being movable from a predetermined position to a position of maximum allowed movement, and is biased towards the predetermined position by a co-axial coil spring surrounding a lower portion of a cylinder of a cylinder and piston arrangement, a first annulus on which said coil spring bears, a first guide sleeve co-axial with said cylinder, surrounding said lower portion thereof and attached to said first annulus, a base plate assembly engaged by said first annulus, the first guide sleeve and its annulus being displaceable with respect to said cylinder, a second annulus on which said coil spring also bears, a second guide sleeve also co-axial with said cylinder, surrounding said upper portion thereof and attached to said second annulus, the second guide sleeve and its annulus also being displaceable with respect to said cylinder, said first guide sleeve being movable towards the second guide sleeve up to an amount determined by the closing of an initial axial gap, a closure cap screwed on to said cylinder, and a support member in said base plate assembly, said cylinder sitting on said support member via mutually intergaging concave/conex support surfaces.

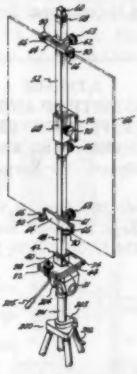


3,738,606

WORK HOLDER

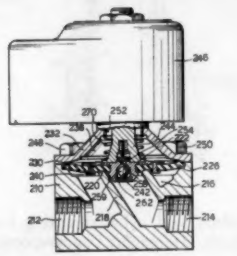
Harold R. Millen, 502 21st S. E., No. 9, Auburn, Wash.

Filed July 1, 1971, Ser. No. 158,857
Int. Cl. A47b 97/08
U.S. Cl. 248—449 13 Claims



A portable work holder apparatus for planar materials such as artist's canvases, drawing boards, lecturer's pads, chalk boards and the like is disclosed having movable, opposed work-engaging jaw means disposed upon a substantially rigid frame apparatus. The work holder is adapted to engage a support means such as a photographic pan head carried by a tripod or other suitable support means. When the work holder is secured to the support means an indexing means may be provided to prevent relative rotation therebetween. Two mounting locations on the work holder are provided, one at the extreme lower end of the frame apparatus and the other oriented perpendicular to the first mounting location and slidable along the length of at least a portion of the frame apparatus. The frame apparatus is extendable to permit gripping of various sized workpieces by the work engaging jaw means on slider-gripper devices movably mounted upon the frame apparatus.

3,738,607
SOLENOID-OPERATED, TWO-WAY, TWO-POSITION VALVE WITH BIDIRECTIONAL FLOW
Marco Peruglia, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy
Filed July 26, 1971, Ser. No. 166,154
Claims priority, application Italy, Feb. 26, 1971, 67678 A/71
Int. Cl. F16k *31/385, 31/06*
U.S. Cl. 251—30 **3 Claims**

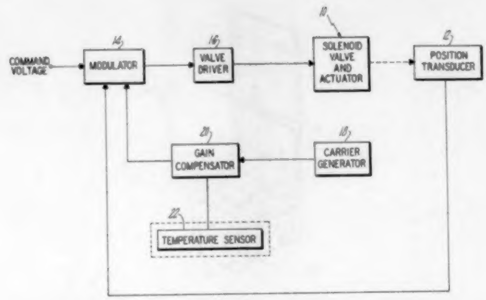


A two-way two position solenoid-operated valve has a valve member movable between open and closed positions, and having a central large orifice and a further, smaller, orifice communicating the valve inlet and outlet ports respectively with a chamber on the remote side of the valve member. The central orifice is fitted with a non-return ball valve which closes in response to pressure at the outlet port to effectively open the valve to unobstructed bidirectional flow when opened by its solenoid actuator.

3,738,608
CHARGE FORMING METHOD AND APPARATUS WITH OVERSPEED GOVERNOR
Warren D. Nutten, Grafton, Wis., and Bernard C. Phillips, Toledo, Ohio, assignors to Borg-Warner Corporation, Chicago, Ill.
Division of Ser. No. 766,580, Oct. 10, 1968, abandoned. This application Sept. 23, 1970, Ser. No. 74,812
Int. Cl. F02d *31/00, 39/00;* F16k *31/44*
U.S. Cl. 251—76 **7 Claims**

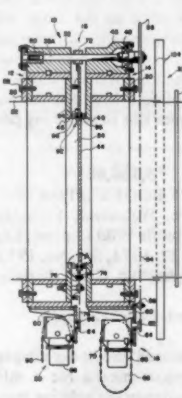
The invention disclosed embraces a charge forming method of and apparatus embodying an instrumentality responsive to engine vibrations or disturbances brought into operation when the engine reaches a predetermined speed to automatically deliver excess fuel to the engine thereby momentarily providing a nonignitible mixture preventing overspeeding of the engine.

3,738,609
TEMPERATURE COMPENSATED PNEUMATIC CONTROL SYSTEM
Albert J. Divigard, Waterbury, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.
Filed June 14, 1971, Ser. No. 152,898
Int. Cl. F15b *13/16;* F16k *31/02*
U.S. Cl. 251—129 **5 Claims**



A pneumatic actuator system including compensation for variations in ambient temperature. Compensation is achieved by varying a position error signal in accordance with temperature before application to a valve actuator.

3,738,610
SEAL ASSEMBLY FOR GOGGLE VALVES
Elden A. Hale, Sr., Pittsburgh, Pa., assignor to Koppers Company Inc., Pittsburgh, Pa.
Filed Aug. 5, 1971, Ser. No. 169,262
Int. Cl. F16k *25/00*
U.S. Cl. 251—167 **6 Claims**



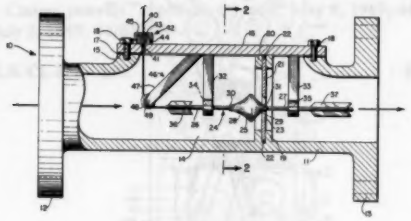
An improved seal assembly for goggle valves of the type including valve bodies connected to the ends of adjoining gas mains with a planar opening between the bodies normal to the flow of gas in the mains and a two-position valve closure in the opening for closing the mains against the flow of gas when the closure is in one position and opening the mains when it is in the other position. The seal assembly includes an inner rigid primary seal and an outer flexible secondary seal between both valve bodies and the portion of the valve closure in the planar opening to prevent the escape of gas between the valve bodies and the valve closure. Preferably, the rigid seal comprises abutting planar sealing surfaces between the valve closure and valve bodies and the flexible seal comprises flexible sealing surfaces, such as silicone rubber, on the valve closure abutting rigid non-planar sealing surfaces on the valve bodies.

3,738,611

FLOW CONTROL VALVE MEANS

Calvin M. Winders, 2704 Sells Street, Metairie, La.

Filed Nov. 24, 1971, Ser. No. 201,766
Int. Cl. F16k 51/00, 47/00
U.S. Cl. 251—294 4 Claims



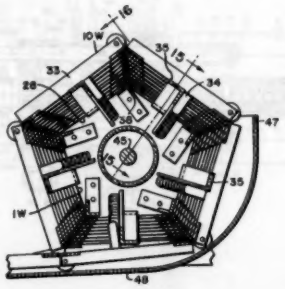
The present invention pertains to flow control valves as employed in a standard piping system. More specifically, the present invention provides a flow control valve offering features which makes it inexpensive to manufacture and especially to maintain. The present flow control valve means basically comprises a main valve portion having a central opening to which a valve cover plate is operably attached and upon which cover plate all of the working parts, including the valve seat, plug, plug guides, plug or valve stem, and plug actuating means are operably mounted whereby the entire flow control assembly can be readily removed from the valve body in a very efficacious manner while employing conventional tools and without requiring any particuaar expertise. The present invention also provides a flow control valve of a design which minimizes the extent of wear realized in most present day control valves due to the influence of the normal dynamic forces encountered.

3,738,612

ADVANCING AND RETRACTING MECHANISM

Arlin P. Hartman, Champaign, Ill., assignor to American Seating Company, Grand Rapids, Mich.

Filed May 4, 1971, Ser. No. 140,115
Int. Cl. B66f 3/02, 1/00
U.S. Cl. 254—1 18 Claims



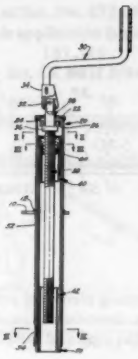
A power system for folding and unfolding bleachers and chair platforms utilizes a pentagon-shaped drum-sprocket for advancing and retracting chain wraps, each wrap consisting of five links of the same length and width but with the wraps varying progressively in width and length whereby the wraps are wound in close-nested relation about the drum-sprocket and are advanced from the drum-sprocket by rotation thereof through the interaction of a sprocket bar on the drum-sprocket and wedge-shaped lugs carried by the links. By employing driving force on the outer extremities of the links, a squaring effect is achieved which translates into straight-line tracking of the chain and sections.

3,738,613

JACK CONSTRUCTION FOR TRAILERS AND THE LIKE

Russell E. Hollis, Jr., Xenia, Ohio, assignor to General Processing Corporation, Crossville, Tenn.

Filed Dec. 30, 1970, Ser. No. 102,836
Int. Cl. B60s 9/02; B66f 3/08
U.S. Cl. 254—86 R 8 Claims



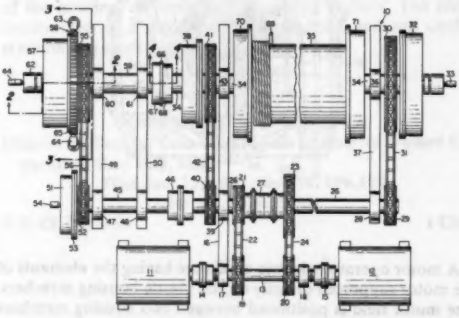
A jack construction having a telescoping inner tubular element guided for longitudinal movement with respect to an outer tubular element wherein the inner element is characterized by two telescoped and closely interfitting tubes of relatively thin-walled construction, such as ordinary hot-rolled, seam welded tubes, secured to one another.

3,738,614

HOISTING APPARATUS EMPLOYING UNITARY CLUTCH AND BRAKE ASSEMBLY

Earl A. Peterson, 4111 Chestnut Avenue, Long Beach, Calif.

Filed May 13, 1971, Ser. No. 143,141
Int. Cl. B66d 1/00
U.S. Cl. 254—187 11 Claims



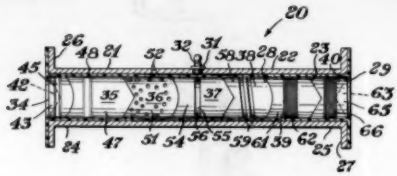
In combination with a drawworks hoist, a continuously slipping clutch is employed with apparatus for applying controlled torque or braking to the drawworks hoist. A drawworks, hoist is used to provide in-haul and overhaul action to a coupled drum, the drum being wound with appropriate cabling. A continuously slipping clutch will drive the drawworks shafts in an in-haul direction through an overrunning clutch when it is desired to maintain a controlled tension on the cable irrespective of vertical movement of the drawworks hoist assembly. The continuously slipping clutch will be disengaged from the drawworks hoist shaft when the drawworks is reeling the cable in an in-haul direction. When the cable is being payed out, the continuously slipping clutch provides supplemental braking by securing the driving member of the continuously slipping clutch to the fixed frame of reference.

3,738,615

INTERFACIAL SURFACE GENERATOR

William C. Brasie, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 8, 1971, Ser. No. 196,352
Int. Cl. B01f 15/02
U.S. Cl. 259—4 8 Claims



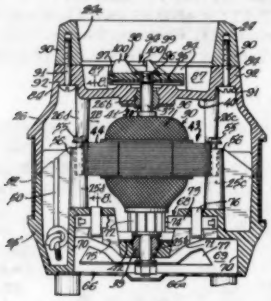
Mixing or flow diverting elements are maintained within a plastic lined pipe by introducing a fluid under pressure between the casing of the pipe and the plastic lining.

3,738,616

MOTOR DRIVEN APPLIANCE

William M. Copeland, Villa Park, and Worthy L. Chambers, Lombard, both of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Filed Oct. 30, 1969, Ser. No. 872,556
Int. Cl. A47j 43/046; H03j 1/02
U.S. Cl. 259—108 5 Claims



A motor operated electric appliance having the elements of the motor supported directly on the plastic housing members. The motor field is positioned between two housing members and serves to align the housing members which also support the armature bearings. Air conduit means formed directly in the plastic housing members directs the motor cooling air into the interior of the housing and across the motor for cooling purposes.

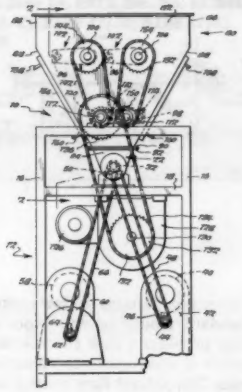
3,738,617

DOUGH CONDITIONING APPARATUS

Anthony F. Madonia, 19 Middlebury Lane, Buffalo, N.Y.

Filed Oct. 23, 1970, Ser. No. 83,339
Int. Cl. A21c 1/00; A23g 1/00, 1/10
U.S. Cl. 259—185 6 Claims

A hopper for receiving a dough mixture and gravity feeding the same to a degassing apparatus. A plurality of agitator rods mounted in the hopper stretch and work the dough mixture to dispel some of the gases retained therein and to fragment large, unequal sized, gas pockets and bubbles formed in the mixture into smaller, uniform sized pockets rendering the mixture soft, pliable and of a uniform texture and consistency prior to the admission of the mixture into the degassing apparatus.

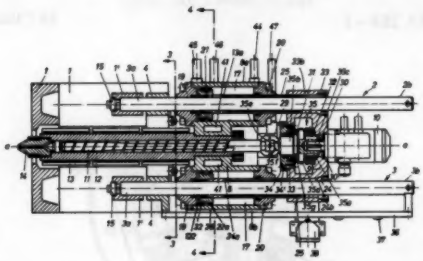


3,738,618

INJECTION UNIT FOR AN INJECTION MOLDING MACHINE

Karl Hehl, 183 Siedlung, D-7291 Lossburg, Wurttemberg, Germany

Filed Oct. 5, 1971, Ser. No. 186,674
Claims priority, application Germany, Oct. 5, 1970, P 20 48 796.1; Mar. 18, 1970, P 21 12 996.4
Int. Cl. B01f 7/24
U.S. Cl. 259—191 21 Claims

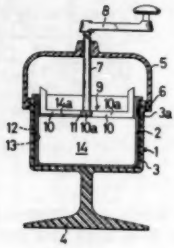


An injection unit for an injection molding machine, supported on struts and including a plasticizing cylinder within which a conveying worm is displaceable, hydraulic cylinders for driving the conveying worm and one or a pair of cylinders for driving the injection unit relative to the injection molding machine, and means for controlling the hydraulic cylinders. Sleeves are provided in conjunction with those hydraulic cylinders which effect the movement of the conveying worm and are concentrically arranged with respect to the struts and support the pistons for the hydraulic cylinders. These sleeves are provided with recesses for accommodating a lubricating medium which lubricates the struts during the movement of the conveying worm.

3,738,619
METHOD AND DEVICE FOR PREPARING HOMEMADE ICE CREAM

Nobuo Shirae, Nishinomiya, Japan, assignor to Tiger Vacuum Bottle Industrial Company Limited, Kadoma, Osaka Prefecture, Japan

Filed May 5, 1970, Ser. No. 34,739
Claims priority, application Japan, May 8, 1969, 44/35959; July 3, 1969, 44/63408
Int. Cl. B01f 7/16
U.S. Cl. 259—108 5 Claims

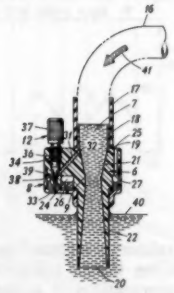


A device comprises a freezer cup, a body for holding the freezer cup, a hand-driven stem adapted to be moved down in the cup, a scraper and a kneader both fixed to the lower end of the stem and extending radially of the center of the freezer cup. A mixture comprising milk, sweetening, cream and flavoring is poured into the freezer cup to about one third the volume of the cup and placed in a household refrigerator. After thorough freezing, the cup is taken out of the refrigerator and mounted on the device. The frozen mixture is flaked into small pieces by the scraper and the flakes of mixture are immediately subjected to overrun by the kneader while the stem is being pushed down under a small pressure. Ice cream ready for serving is obtained.

3,738,620
AQUARIUM AERATOR

Bobbey G. Ennis, 40975 Chiltern Drive, Fremont, Calif.

Filed Aug. 4, 1971, Ser. No. 168,808
Int. Cl. B01f 3/04
U.S. Cl. 261—6 6 Claims

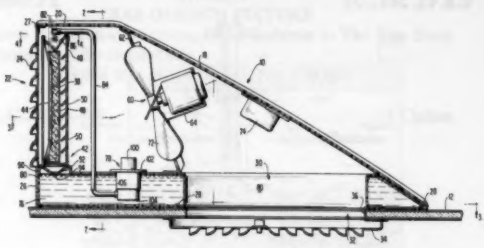


An aerator for an aquarium which includes a venturi tube in the recirculating system at the water return side, air and water reservoirs located adjacent the venturi tube, a small passage carrying controlled amounts of air in the upper portion of the passage from the air reservoir and controlled amounts of water in the lower portion of the passage from the water reservoir, the passage having a discharge port opening to the restricted section of the venturi where the air enters the water forming tiny bubbles, and a manually adjustable control for adjusting the air/water ratio flow through the passage. The passage being dimensioned such that the water meniscus in the passage covers a substantial portion of the passage.

3,738,621
EVAPORATIVE COOLER

Les Anderson, Las Vegas, Nev., assignor to Everkool, Inc., Las Vegas, Nev.

Continuation-in-part of Ser. No. 875,084, Nov. 10, 1969, Pat. No. 3,606,982. This application Sept. 17, 1971, Ser. No. 181,341
Int. Cl. B01f 3/04
U.S. Cl. 261—29 14 Claims

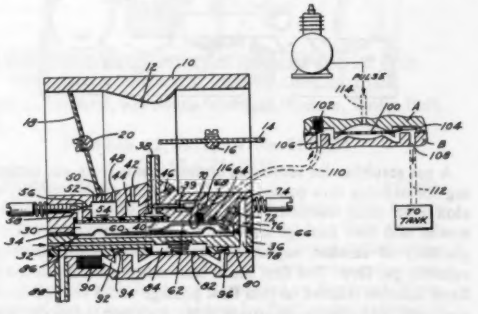


This disclosure relates to a rooftop evaporative cooler for cooling the interior of vehicles, such as campers and trailers, whether the vehicle is moving or stationary. The unit includes a rear-facing streamlined housing disposed over a rooftop register. The forward surface of the housing slopes upwardly from the vehicle roof to a horizontal rear portion adjacent a rear-opening, louvered entrance port. A suction fan is disposed within the housing between the entrance port and the register for pulling air into the housing through an evaporative pad and for expelling cooled air, guided by the configuration of the housing, through the register into the vehicle. The cooling medium is pumped from a supply tank contained within the housing to a distributor over the pad and collected after it passes through the pad for recirculation. The supply tank is substantially toroidal and is disposed within the lower portion of the housing, surrounding the rooftop register. The pad is constructed of a suitable porous material and the cooling medium is typically water.

3,738,622
VAPOR-FREE CARBURETOR

Charles H. Tuckey, Cass City, Mich., assignor to Walbro Corporation, Cass City, Mich.

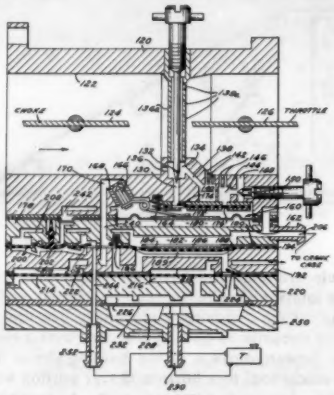
Filed Jan. 13, 1971, Ser. No. 106,174
Int. Cl. F02m 17/04
U.S. Cl. 261—35 1 Claim



A diaphragm-controlled carburetor having a fuel inlet valve and a diaphragm chamber particularly for location on small engines where the carburetor is subject to high vibration and

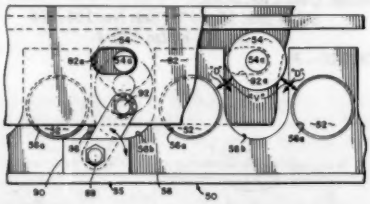
close confinement so that there is a possibility of heat build-up and the provision of a vapor pump in the carburetor for removal of vapor from a high point in the metering diaphragm chamber where vapor can collect to prevent vapor lock and other malfunctioning of the carburetor.

3,738,623
DIAPHRAGM CARBURETOR
Charles H. Tuckey, Cass City, Mich., assignor to Walbro Corporation, Cass City, Mich.
Filed Jan. 13, 1971, Ser. No. 106,178
Int. Cl. F02m 17/04
U.S. Cl. 261—35 **2 Claims**



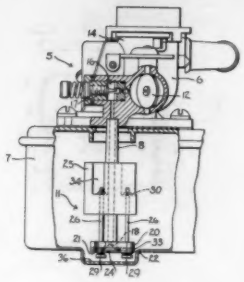
A diaphragm-controlled carburetor having a pressure pump actuated by engine pulses wherein a pump diaphragm is supported by a pan-shaped side mount spring to assist pressure pulses of the engine in a manner to improve the pump efficiency at both low speed and high speed conditions.

3,738,624
GAS SCRUBBER
Robert L. McIlvaine, Glencoe, Ill., assignor to Environeering, Inc., Skokie, Ill.
Filed Oct. 26, 1971, Ser. No. 192,489
Int. Cl. B01d 47/06
U.S. Cl. 261—44 R **12 Claims**



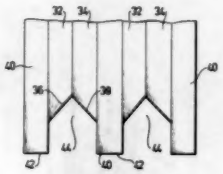
A gas scrubber for removing contaminants from gas including constricting flow passage means for said gas, a plurality of elongated filter elements in parallel extended transversely across said flow passage means and defining therebetween a plurality of smaller, separate, discrete flow paths for high velocity gas flow. The first set of said elements is mounted in fixed relation relative to said flow passage and a second set of elements comprising alternate ones between adjacent elements in said first set is supported for movement relative to said elements in the first set to vary the size of said discrete flow paths therebetween. Means is provided for adjusting and holding the relative position of the elements in the first and second sets, thereby defining a selected total flow area for accommodating a given rate of gas flow.

3,738,625
PUMPLESS FUEL SYSTEM FOR SMALL ENGINES
Robert G. Thompson, Milwaukee, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.
Filed Dec. 10, 1970, Ser. No. 96,879
Int. Cl. F02m 7/20
U.S. Cl. 261—68 **3 Claims**



In a pumpless fuel system for a small engine, having a suction tube extending down into a fuel tank from a carburetor venturi, a fuel inlet in the suction tube is large enough to provide the desired fuel flow rate when fuel in the tank is low, but a rich fuel-air mixture at high fuel levels. At high levels the inlet is restricted, to afford the desired flow rate, by a restriction valve element then maintained in operative position by an annular float surrounding and guided by the suction tube.

3,738,626
DEVICE IN CONTACT BODIES FOR LIQUID AND GAS
Per Gunnar Norback, Lidingo, Sweden, assignor to Aktiebolaget Carl Munters, Sollentuna, Sweden
Filed Mar. 24, 1971, Ser. No. 127,663
Claims priority, application Sweden, Mar. 26, 1970, 4253/70
Int. Cl. B01f 3/04
U.S. Cl. 261—112 **1 Claim**



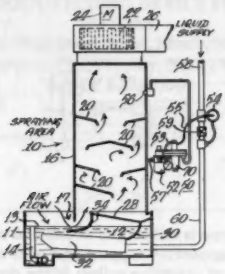
The invention relates to a contact body for liquid and gas, primarily for cooling towers and composed of corrugated layers with the corrugations in adjacent layers forming an angle relative each other and extending at an inclined angle towards a lower liquid discharge edge formed with means to counteract collection of liquid resulting from the combined effect of surface tension in the liquid and the upwardly streaming gas. To improve the discharge flow of the liquid two adjacent layers of the contact body are in pairs at their edges cut obliquely so as together to form an inverted V, viewed in the surface extension of said layers Between each such pair of layers a third layer having a transversely cut lower edge is provided and formed with a prolongation terminating in said transversely cut lower edge and extending for a distance below the layers formed with the obliquely cut edges.

3,738,627

CONTROLLER AND CONTROL SYSTEM

Ronald R. Scotchmur, Schiller Park, Ill., assignor to Binks Manufacturing Company, Franklin Park, Ill.

Filed Mar. 22, 1971, Ser. No. 126,566
Int. Cl. B01f 3/04
U.S. Cl. 261—119 R 4 Claims



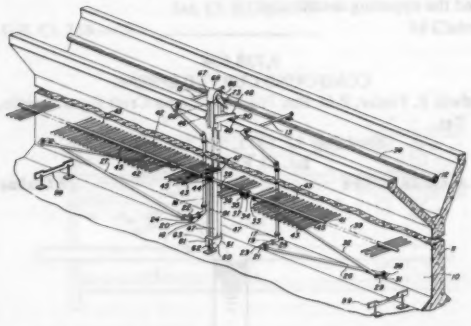
A vacuum responsive controller and control system is disclosed for safely controlling the water level in paint spray booths of the type employing a high velocity air-current to entrain water from a reservoir and thereby aid in removing airborne paint particles. The controller and system sample and signal the vacuum in the booth as an index of the dynamic conditions of water level and air velocity, and for vacuums below a threshold value, automatically raise the reservoir water level to achieve proper entrainment. The controller automatically responds to a lower vacuum to not supply water. Thus a failure of the air impeller will not result in water flowing to the reservoir. The controller includes a diaphragm moving in response to the pressure difference between vacuum and atmospheric inlets and valve means responsive to the diaphragm's flexing over a range to not feed, feed, and again not feed an air pressure signal to a command signal output which controls a water supply valve. Adjustable mechanical biasing on the diaphragm allows for changing the operation point of the controller.

3,738,628

REMOVABLE DEEP TANK GAS DIFFUSING APPARATUS

Leonard M. Nechine, Highland Park, Ill., assignor to FMC Corporation, Chicago, Ill.

Filed Feb. 22, 1971, Ser. No. 117,567
Int. Cl. B01f 3/04
U.S. Cl. 261—122 2 Claims



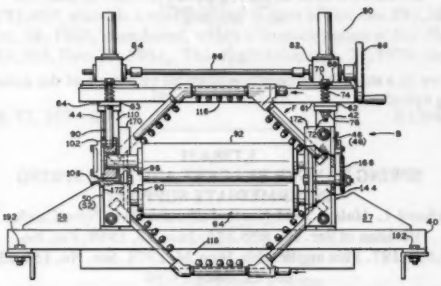
An apparatus for diffusing gas in tanks containing liquid mediums that is elevatable out of the tank for servicing which comprises a guide member supported from the tank top and extending downwardly to a point in the vicinity of the bottom of the tank, a traveler support member associated with said guide member, a gas diffuser header secured to said traveler support member, means for actuating said traveler for upward and downward movement, at least one stationary gas duct connected to a gas supply line and extending vertically downwardly to a point in the vicinity of the tank bottom, a first air pipe pivotally secured to the lower end of said stationary gas duct, a second air pipe pivotally secured at its other end to said gas diffuser header, a plurality of diffusers secured to the tubular header and spaced supports in contact with the tank bottom and the header when said header is in its lowermost position.

3,738,629

BAR QUENCH FIXTURE

Vincent R. Coleman, Aurora, Ohio, assignor to The Van Dorn Company, Cleveland, Ohio

Filed Mar. 4, 1971, Ser. No. 120,898
Int. Cl. C21d 1/62
U.S. Cl. 266—6 S 15 Claims



A quenching apparatus for quenching elongated bar-type workpieces wherein a plurality of interchangeable roll stands comprised of generally horizontal and vertical roll pairs define an elongated workpiece pass. At least one of the rolls of each roll pair is moveable towards and away from its associated roll normal to the workpiece pass in order to accommodate workpieces of various dimensions. Each horizontal roll pair includes a quenching fluid manifold on each side of the roll pair which transversely surrounds the pass and includes a plurality of fluid outlet nozzles directed inwardly towards the pass area. Each manifold is interconnected with the moveable horizontal roll so as to be moved one half the distance of movement of the moveable horizontal roll to facilitate a symmetrical quenching fluid spray pattern to the workpiece pass irrespective of workpiece dimensions.

3,738,630

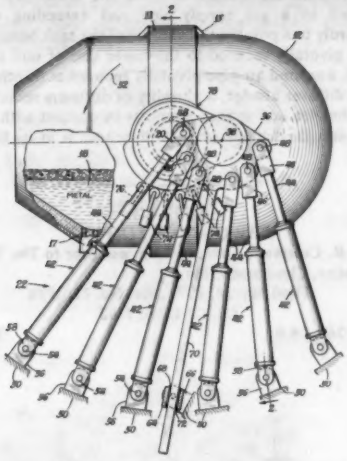
LOW SPEED HIGH TORQUE ROTARY DRIVE FOR TURNING A FURNACE VESSEL OR THE LIKE

Milton C. Stafford, 624 South Michigan Avenue, Tinley Park, Ill.

Filed Feb. 22, 1971, Ser. No. 117,234
Int. Cl. C21c 5/50
U.S. Cl. 266—36 P 3 Claims

A high output torque for low speed rotation of a heavily laden furnace vessel or the like is provided by a fluid energizing rotary drive in which a plurality of actuating cylinders are connected with a driving crank by a common eccentric connector rotatably stabilized and journalled on the crank. Energization of the actuating cylinders by fluid under pressure is automatically synchronized with rotation of the driving crank so that the cylinders all work together to urge the driving crank in the same rotary direction. A fluid energizing system operates, on stored energy if necessary, under the control of a

master control valve to effect rotation of the drive in either direction and to forcefully but progressively decelerate the



drive to a standstill where it is held, all by means of the actuating cylinders.

3,738,631

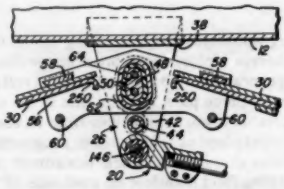
SPRING HANGER BRACKET AND LEAF SPRING INTERMEDIATE SUPPORT

Richard L. Haley, 2523 North Jefferson Ext., New Castle, Pa.

Division of Ser. No. 833,325, June 16, 1969, Pat. No. 3,591,197. This application June 24, 1971, Ser. No. 156,231

Int. Cl. B60g 11/10

U.S. Cl. 267—52 9 Claims



A suspension assembly for tandem axles including an equalizer beam pivot axis defining assembly including (1) a rubber bushed pivot shaft of noncircular configuration and designed to be maintained under compression, rather than being placed under shear stresses, by vertical loading as well as during oscillation of the beam, (2) spring hanger and mounting brackets designed for ease in installation on vehicle frames and axles with maximum strength, (3) substantially stationarily spaced spring bearing surfaces and (4) improved spring-to-axle mounting serving to reduce the length of the static mounted spring mid-portions.

3,738,632

WEIGHT-BALANCING ARRANGEMENT AT VERTICALLY DISPLACEABLE INSTRUMENT TABLES FOR OPHTHALMOLOGICAL APPARATUS OR THE LIKE

Franz Mayerhofer, Munich, Germany, assignor to Optische Werke G. Rodenstock, Munich, Germany

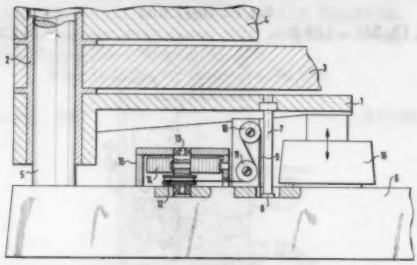
Filed Mar. 5, 1971, Ser. No. 121,365

Claims priority, application Germany, Mar. 5, 1970, P 20 10 386.0

Int. Cl. F16f 1/12

U.S. Cl. 267—135 16 Claims

A weight-balancing arrangement on essentially vertically displaceable instrument tables for ophthalmological apparatus or the like which includes a pull rope connected with a spring and engaging at the apparatus support approximately in the centroidal axis thereof to counteract the weight; the drawing direction of the spring extends in an approximately horizontal



plane while the rope is connected at one end with a downward extension of the apparatus support and over a section thereof is guided by way of reversing rollers in the direction of movement of the apparatus support.

3,738,633

SHOCK AND VIBRATION DAMPER

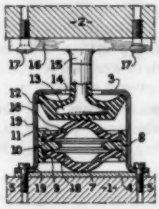
Andre Lucien Pineau, 12 Rue de Bearn, 92 Saint-Cloud, France

Filed Jan. 26, 1971, Ser. No. 109,833

Claims priority, application France, Mar. 3, 1970, 7003679

Int. Cl. F16f 7/12

U.S. Cl. 267—141 11 Claims



Damper for damping shocks and vibrations between elements comprising an elastically yieldable supporting membrane bearing on the base wall of a housing, an elastically yieldable opposing membrane and a piston cooperating with the two membranes and adapted to be connected to another of the elements. At least one additional elastically yieldable membrane having a stiffened periphery is mounted in the housing to slide therein between the supporting membrane and the opposing membrane.

3,738,634

COMPOUND CURVED SPRING

Edwin E. Foster, P.O. Box 714, 1801 Camp Craft Road, Austin, Tex.

Filed July 13, 1971, Ser. No. 162,185

Int. Cl. F16g 1/06

U.S. Cl. 267—156 14 Claims

A spring formed from an unstressed ribbon having an applied cross curvature with the center portion under compres-

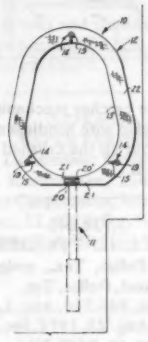
sion; said spring being formed into a normal coiled state and being stress relieved whereby upon movement of said spring from its state of repose to wound condition the same will retain a cross curvature throughout its extent.

3,738,635

PARTS AND TOOL CATCHING DEVICE FOR OUTBOARD MOTORS

Norman J. Ebert, West Shore Road, Ithaca, N.Y.

Filed Mar. 15, 1971, Ser. No. 123,989
Int. Cl. B23g *3/00*
U.S. Cl. 269—15 1 Claim



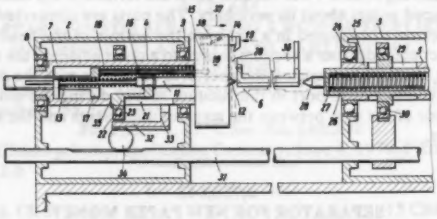
A device for catching parts and tools when working on an outboard motor attached to a boat. This device consists of a sheet of material which is placed onto the housing of the outboard motor and includes hold-down clamps for securing it thereto. The device also has tension springs so that it will be adaptable to motors having no rail or ledge for fastening the device.

3,738,636

APPARATUS FOR GRIPPING AND HOLDING ELONGATED WORKPIECES PARTICULARLY IN INDUCTION HARDENING MACHINES

Friedhelm Reinke, Remscheid, and Edgar Stengel, Wuppertal-Hahnerberg, both of Germany, assignors to AEG-Elotherm GmbH, Remscheid-Hasten, Germany

Filed May 24, 1971, Ser. No. 146,190
Claims priority, application Germany, May 23, 1970, P 20 25 227.1
Int. Cl. B23q *3/06*
U.S. Cl. 269—49 10 Claims



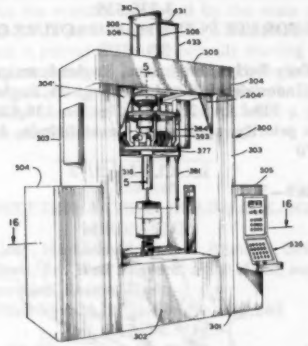
Apparatus for chucking and holding an elongated workpiece, for example, for an induction heating device, so that a workpiece reference surface bears against a fixed abutment and is always located at the same place. In the embodiment described below, two opposed clamps mounted in a frame are urged toward one another by compression springs to hold a workpiece axially. To release a workpiece, one of the clamps is moved away from the other which follows as urged by its compression spring. An intermediate member is mechanically linked to the first mentioned clamp by two racks and a pinion so that the member moves in the opposite direction and, after a predetermined travel, engages the second mentioned clamp to cause it to also move away from the first mentioned clamp and release the workpiece. A chuck having jaws which pivotably close over the edges of a flange is preferably associated with the second mentioned clamp and either the flange surface held by the jaws or the opposite surface can serve as the reference surface.

3,738,637

METHOD AND APPARATUS FOR FILAMENT WINDING ABOUT THREE AXES OF A MANDREL AND PRODUCTS PRODUCED THEREBY

William B. Goldsworthy, Palos Verdes Estates, and John A. Bunnell, South Laguna, both of Calif., assignors to Goldsworthy Engineering, Inc., Torrance, Calif.

Division of Ser. No. 709,676, March 1, 1968, Pat. No. 3,701,489, which is a continuation-in-part of Ser. No. 591,387, Oct. 18, 1968, abandoned, which is a continuation of Ser. No. 156,563, Nov. 29, 1961,. This application Apr. 23, 1970, Ser. No. 43,311
Int. Cl. B23q *3/18*
U.S. Cl. 269—61 8 Claims



A mandrel supporting apparatus for use in filament winding systems and the like, which apparatus comprises a shiftable carriage mechanism having a plurality of mandrel-supporting shafts mounted thereon. Each of the shafts have their central axis disposed in perpendicular relationship with respect to each other and at their outer ends, each carry a mandrel-supporting table. Extendable arms provided with mandrel engaging clamping members are mounted on the underside of the table and a rack and pinion gear mechanism operable by a fluid power mechanism permits extension of these arms and actuation of the clamping members. The carriage and hence the mandrel-supporting tables are movable in a relatively vertically located arc so that the tables can be shifted from a supporting position where they are in a location to support a work element such as a mandrel to a remote position where they are not in engagement with the mandrel. Furthermore, during the shifting movement of the respective mandrel-supporting tables with the carriage, a mandrel can be shifted from one of the tables to the other so that work in the form of filament winding may be performed with respect to the mandrel.

3,738,638

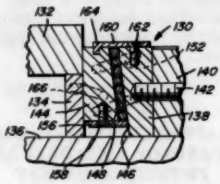
WORKPIECE SUPPORTING CLIP ON PARALLELS AND ROLLER BEARING TYPE HOLD-DOWN JAWS

Carl O. Lassy, c/o Lassy Tool Company, Bristol, Conn.

Division of Ser. No. 589,269, Oct. 25, 1966, Pat. No. 3,514,092. This application May 22, 1970, Ser. No. 39,652

Int. Cl. B23q 3/02

U.S. Cl. 269—136 11 Claims



A workpiece holder including a bed and a pair of upstanding opposed jaws mounted thereon with at least one jaw being movable in relation to the other. Clip-on parallels are provided for positioning between the bed and a workpiece and attached to the jaw so that it will not be displaced when the workpiece is inserted into or taken out of the holder. At least one jaw is provided with means exerting a downward force on the workpiece when the jaws are moved toward each other into clamping engagement with the workpiece with such means being in the form of a roller bearing attachment having inclined surfaces engaging the roller bearing.

3,738,639

MASKS FOR USE IN THE MANUFACTURE OF CIRCUIT BOARDS

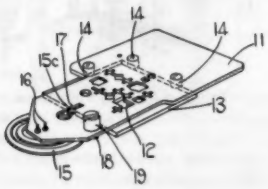
Ronald Cory Berlyn, Edgbaston, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Apr. 23, 1971, Ser. No. 136,835

Claims priority, application Great Britain, June 9, 1970, 27,808/70

Int. Cl. B23q 3/18

U.S. Cl. 269—317 2 Claims



A mask for use in the manufacture of a circuit board has a base with a plurality of apertures therein arranged to receive components and or connectors which are to be connected to each other and/or to a substrate associated with the mask. The base carries resilient means which urges the substrate against a fixed stop on the base to hold the substrate in position relative to the base.

3,738,640

CATCHER MECHANISM FOR THE SPREADING OF QUILTING MATERIAL

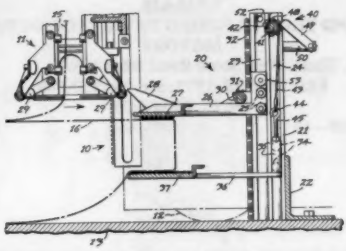
Cecil S. Frederick, Nashville, Tenn., assignor to Cutters Machine Company, Inc., Nashville, Tenn.

Filed Jan. 20, 1971, Ser. No. 107,896

Int. Cl. B65h 29/46

U.S. Cl. 270—31 4 Claims

A catcher mechanism to be used in cooperation with a cloth spreading machine, particularly for the spreading of quilting material. The catcher mechanism supports an upper catcher bar, adapted to be automatically raised by cooperation with the spreading machine, for resting upon the top of the end portions of the spread layers of material. A lower catcher bar



is also supported on the catcher mechanism below the upper catcher bar and is provided with windlass means for raising the lower catcher bar to hold up the crushed end portions of the layers of quilting material.

3,738,641

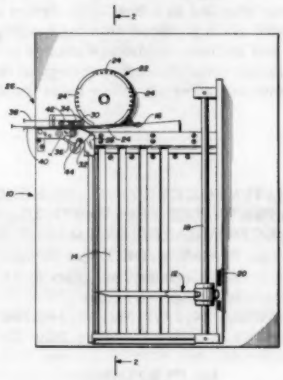
DOCUMENT FEEDER

Edward Lewis Noah, Dallas, Tex., assignor to Recognition Equipment Incorporated, Dallas, Tex.

Continuation of Ser. No. 846,746, Aug. 1, 1969, abandoned. This application Aug. 23, 1971, Ser. No. 174,206

Int. Cl. B65h 3/10

U.S. Cl. 271—94 4 Claims



A document feeder includes a rotating head for moving individual documents from a stack of documents to document receiving rollers. Four vacuum ports are formed in the head at spaced points about its periphery. The ports are connected to apertures positioned in a circle on the bottom of the head. A duct extends from a vacuum source to a point adjacent the circle. As the head rotates, the apertures cooperate with the duct to connect each port to the vacuum source during the movement of the port between the stack of documents and the rollers.

3,738,642

SEPARATOR FOR NEW PAPER MONEY

Pete Blaire, Greenville, Pa., assignor to Michael Halliday and Samuel J. Orr, IV, Greenville, Pa., part interest to each

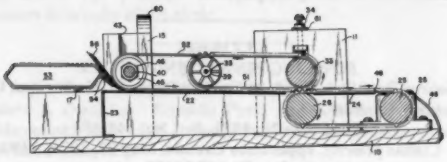
Filed June 8, 1971, Ser. No. 150,977

Int. Cl. B65h 3/04, 5/02

U.S. Cl. 271—10 5 Claims

New paper money in stacks or packages is fed along two spaced lower resilient corrugated belts driven by a motor. The

corrugations of these belts engage corrugations in the lower runs of similar belts disposed above the lower belts. The upper belts feed bills from the stack or package of bills into the nips



between the pairs of belts and slightly corrugate the bills to separate them and to prevent the bills from sticking together when again stacked or packaged.

3,738,643

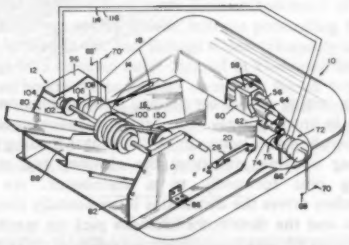
PAPER FEEDER

Ronald I. Bell, Fort Lauderdale; David E. Snyder, Hollywood, and Donald Carl Hendrickson, Lauderhill, all of Fla., assignors to Datatype Corporation, Miami, Fla.

Filed Oct. 12, 1971, Ser. No. 188,239

Int. Cl. B65h *7/10, 9/16*

U.S. Cl. 271—52 **30 Claims**



A paper feed and alignment mechanism comprising a device for moving sheets of paper longitudinally forwardly and a cooperating guide system, the guide system including a longitudinally extending alignment reference for engaging one side edge portion of such sheets and a device for urging such sheets against the reference. The moving device includes wheels which are proportioned and designed intermittently to engage such sheets and urge them forwardly as the wheels rotate. The alignment mechanism acts on the sheets to align them with the reference during the periods of disengagement by the wheels.

3,738,644

APPARATUS FOR SEPARATING A ROW OF TIERLIKE SUPERPOSED FLAT ARTICLES, PARTICULARLY NEWSPAPERS

Willi Kluge, and Reinhard Kluge, both of D-63 Griessen, Kugelberg, 55, Germany

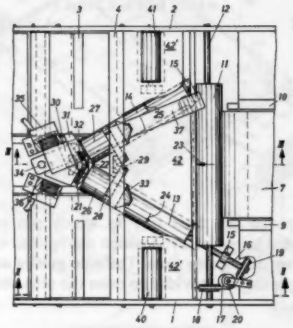
Filed June 2, 1971, Ser. No. 149,204

Claims priority, application Germany, June 4, 1970, P 20 27 422.0

Int. Cl. B65h *29/60*

U.S. Cl. 271—64 **13 Claims**

An apparatus for deviding a row of tierlike superposed flat articles, particularly newspapers, which row rests on a main conveyor belt, into two dividing rows. The apparatus is characterized by at least one swordlike slide having an operating mechanism for insertion of the slide between two articles lying one on top of the other. In addition, two rollers (dividing rollers) are provided having a friction coating thereon and are arranged below a table and extend with their upper sides through slots in the table. The upper sides of the rollers are positioned lower than the transporting surface of the conveyor belt and the axes of which are arranged parallel to the direction of movement of the main conveyor belt or V-shaped in such a manner that the dividing rollers at an increasing distance from the main conveyor belt approach one another. A movable roller cover is provided which is interchangeably associated with the one or the other of the dividing rollers for



covering same. Conveyor belts (divided flow conveyor belts) are connected after the dividing rollers and a counting device is provided for the articles conveyed by the main conveyor belt or the divided flow conveyor belts. A control and operating mechanism is provided for periodically moving the slide and the roller cover in such a manner that the roller cover is changed over to a different dividing roller when the slide holds the papers away from the dividing rollers after a predetermined number of articles have been conveyed.

3,738,645

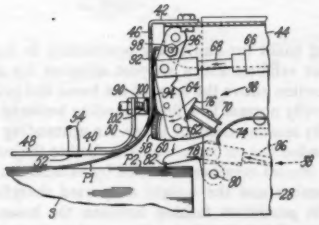
TOP SHEET SEPARATING, HOLD-BACK-DOWN MECHANISM

Richard W. Gray, Marblehead; Paul G. Rumball, Beverly, and Oliver C. Brett, Jr., West Boxford, all of Mass., assignors to USM Corporation, Boston, Mass.

Filed Nov. 26, 1971, Ser. No. 202,145

Int. Cl. B65h *3/14*

U.S. Cl. 271—26 R **10 Claims**



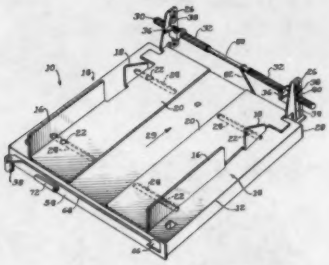
A sheet folding machine, especially one adapted to pick off and transfer successive fabric plies from a stack, is provided with improved sheet restraining means. It comprises a pneumatic separating means and a pair of cooperative, hold-back and hold-down devices for insuring that only single work pieces are cyclically removed from the stack.

3,738,646

PIN FEED TRAY

Casimir S. Samczyk, Franklin Park, Ill., assignor to Bell and Howell Company, Chicago, Ill.

Filed July 6, 1971, Ser. No. 159,859
Int. Cl. B65h *1/04*
U.S. Cl. 271—170 **8 Claims**



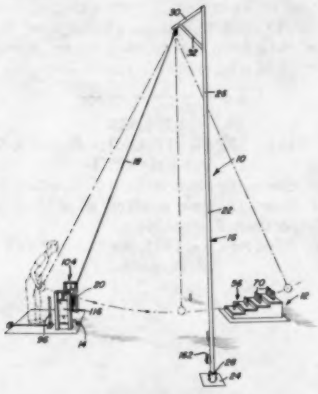
An improved pin feed tray in which pin separators are mounted on a horizontal rod which has splines engaging teeth formed in vertical guide slots. The side guides are self-centering and apparatus is provided to raise the pins and separate the side guides.

3,738,647

GAME WITH SWINGABLY SUPPORTED IMPACT MEMBER

Myron C. Morrill, 295 Outer Drive, Venice, Fla.

Filed Aug. 27, 1971, Ser. No. 175,614
Int. Cl. A63d *7/00*
U.S. Cl. 273—40 **6 Claims**



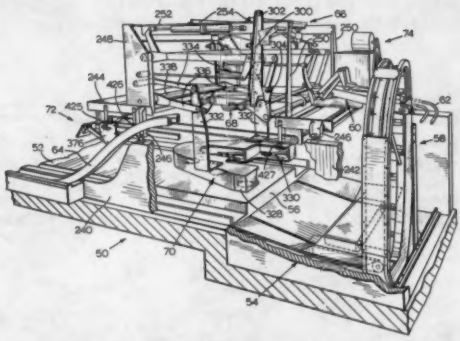
A pair of bases for stationary positioning in horizontally spaced apart relation and a support member for support in elevated position above the level of the bases and in an upright plane generally normal to a line extending between the bases and centrally intermediate the latter. An upstanding elongated tension member has its upper end attached to the support and a weighted impact member is carried by its other end with the tension member and the weight supported therefrom being swingable in pendulum fashion between the bases. At least one target member is supported on one of the bases for impact therewith by the impact member. The player stands on the other of the bases and releases the impact member for pendulum-like swinging movement toward the target member. As the tension member moves past vertical switches are actuated thereby to control solenoid actuated latches on the player's base. Actuation of the latches allows an upwardly biased assembly to move upwardly. Disposed on the assembly are one-way gate members which, when the assembly is in its raised position, allow the impact member to move therepast toward the player but prevent the impact member from moving back toward the target member. The assembly also includes a horizontally disposed bar positioned between the gate members and the player in such manner as to prevent the impact member from hitting the player.

3,738,648

BOWLING PIN SETTING DEVICE

George Paul Strickland, 26 Patricia Drive, St. Catherines, Ontario, Canada

Filed May 20, 1971, Ser. No. 145,456
Claims priority, application Canada, May 22, 1970, 83824
Int. Cl. A63d *5/09*
U.S. Cl. 273—43 A **28 Claims**



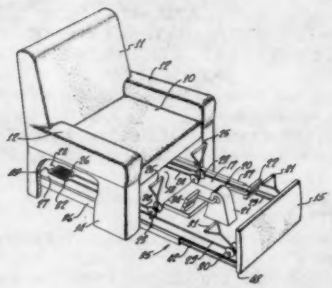
A pin setting device for placing bowling pins on a playing surface in bowling array. The device includes an elevator for lifting bowling pins upwardly, a distributor feeding system for receiving bowling pins from the elevator and moving the bowling pins forwardly to a distributor. An indexing mechanism drives the distributor incrementally about a vertical axis and the distributor includes pick-up mechanisms to grip pins off the distributor feeding system. A guide plate combines with the pick-up mechanisms to position the pins in bowling array as the rotor turns. Separate and distinct setting and clearing mechanisms are provided to respectively strip pins off the distributor and place the pins on the playing surface, and to raise pins off the playing surface while the surface is swept to remove fallen pins.

3,738,649

COMBINED CHAIR AND EXERCISING DEVICE

Eddie Miller, 21724 Western, Torrance, Calif.

Filed Nov. 16, 1970, Ser. No. 89,765
Int. Cl. A63b *21/00, 21/02, 23/04*
U.S. Cl. 272—58 **3 Claims**



An exercising arrangement including a chair having a space beneath the seat portion, with the exercising devices being

mounted on a platform position beneath the seat and concealed by side and front panels. A track comprises the mount for the platform, permitting it to be extended in front of the seat portion where the exercising apparatus is accessible for manipulation by a person sitting in the chair. An adjustable stop allows the platform to be positioned a convenient distance forwardly of the chair.

3,738,650
DOORWAY GYM BARS

Robert J. Ossenkop, Rochelle Park, and Alfred L. Wilson, Maywood, both of N.J., assignors to AMF Incorporated, White Plains, N.Y.

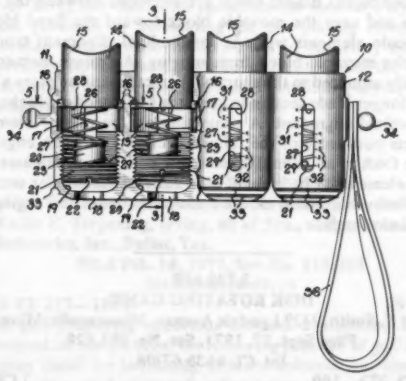
Filed Nov. 22, 1971, Ser. No. 201,128
Int. Cl. A63b *1/00*
U.S. Cl. 272—62 1 Claim

Doorway gym bars comprising a pair of telescoped tubes having metallic end fittings for locking the tubes to metallic brackets fastened to a door jamb. One embodiment of the invention comprises spring biased buttons protruding through apertures formed in the end fittings which releasably lock the end fittings into circular holes formed in U-shaped brackets. Another embodiment comprises circularly flared tube ends which nest in a wedge-shaped slot formed in each bracket. A third embodiment comprises wedge-shaped end-fitting blocks having offset tabs which complementarily fit into wedge-shaped bracket blocks having a pair of offset slots.

3,738,651
FINGER, HAND AND FOREARM DEVELOPER

Donald Norman, 2340 Linwood Avenue, Fort Lee, and Samuel Cherba, 735 Totowa Road, Totowa, both of N.J.

Filed Dec. 6, 1971, Ser. No. 205,029
Int. Cl. A63b *11/08*
U.S. Cl. 272—67 4 Claims



A hand exercising device having four independently adjustable spring actuated plungers within a casing for compression thereof by four fingers of a hand in which the compression impressed upon each plunger is adjustable to an indicated amount in accordance with the requirement of each finger.

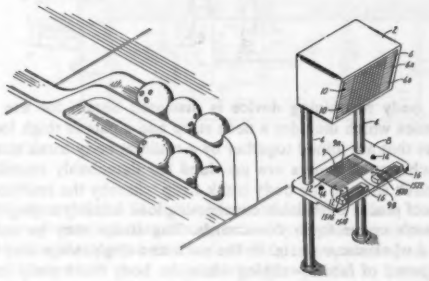
ERRATA

For Classes 273—40 and 273—43 see:
Patents Nos. 3,738,647 and 3,738,648

3,738,652
AUTOMATIC BOWLING SCORE COMPUTING AND DISPLAY DEVICE

Eugene E. Reynolds, Richmond, Calif., assignor to Brunswick Corporation, Chicago, Ill.

Continuation of Ser. No. 697,632, Nov. 20, 1957, abandoned.
This application May 16, 1962, Ser. No. 196,039
Int. Cl. A63d *5/04*
U.S. Cl. 273—54 C 269 Claims

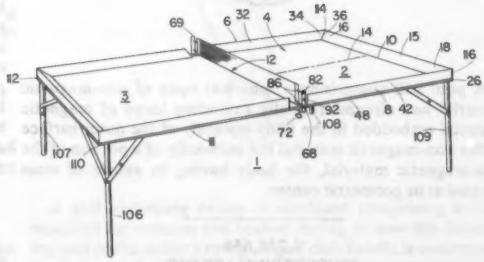


A bowling score computer having either manual keyboard or automatic pinfall sensing input. The computer is operative to record mark counts, totalize and display team scores, allow entry of handicap scores and automatically record pace-setter scores. First and second pinfall values for each frame are recorded and the scoring cycle is modified in accordance with first and second ball pinfall. In a first embodiment the frame scores are printed on individual tablets which are thereafter manipulated to display positions. In a second embodiment, the scores are printed on a moveably disposed scoresheet. A device is provided for projecting the scores.

3,738,653
TABLE TENNIS GAME WITH SLOPING PERIPHERAL BOUNDARY

Warren O. Simpson, 1276 Chalmero Drive, Battlecreek, Mich.

Filed May 18, 1970, Ser. No. 37,943
Int. Cl. A63b *39/00*
U.S. Cl. 273—30 6 Claims

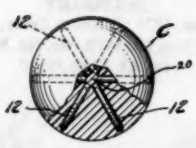


A game device for use with a ball and paddles comprising a game board having a playing surface having a recessed central portion and upstanding side portions adjacent to the periphery of said recessed portion. The upstanding side portions have a triangular cross section and are sloped downwardly and inwardly toward the playing surface. A layer of felt material is secured to the playing surface for providing a degree of friction to a ball bounced thereagainst and for reducing the coefficient of restitution of the surface in a specific embodiment.

3,738,654
ATHLETIC AID
Robert C. Whaley, Jr., Pasadena, Calif., assignor to J. Thornton Posey, Pasadena, Calif.
Filed July 23, 1971, Ser. No. 165,044
Int. Cl. A63b 67/00
U.S. Cl. 273—55 R 2 Claims

A body restraining device is disclosed herein for use in athletics which includes a neck strap and a pair of thigh loop straps that are joined together by a resilient body trunk strap. Attachment fasteners are provided for detachably coupling the neck strap to the body trunk strap whereby the resiliency thereof places a yieldable constricting load forcibly urging the wearer's upper torso downwards. The straps may be composed of elastic material or the neck and thigh straps may be composed of fabric webbing while the body trunk strap may be a shock cord or the like.

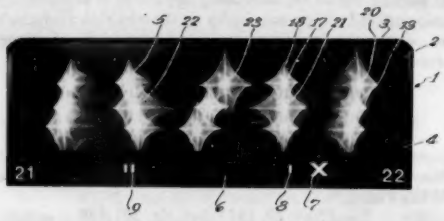
3,738,655
MAGNETIC POOL BALL
Earl W. Feddick, and Gustane Wassman, both of Bay City, Mich., assignors to Victor Comptometer Corporation, Chicago, Ill.
Division of Ser. No. 696,344, Jan. 8, 1968, Pat. No. 3,547,439, which is a division of Ser. No. 207,694, July 5, 1962, Pat. No. 3,362,910. This application Aug. 17, 1970, Ser. No. 64,272
Int. Cl. A63b 37/00
U.S. Cl. 273—59 A 1 Claim



A pool ball comprising a spherical body of non-magnetic material and circumferentially extending loops of magnetic material embedded in the body inwardly of the outer surface of the non-magnetic material but outwardly of a portion of the non-magnetic material, the body having its center of mass located at its geometric center.

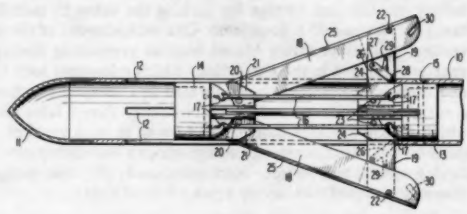
3,738,656
PINSETTER MASKING
Albert M. Rockwood, North Muskegon; Robert W. Lemieux, Spring Lake; Allen Lutz, Muskegon, all of Mich., and Ralph M. Lazar, Skokie, Ill., assignors to The Brunswick Corporation, Skokie, Ill.
Filed Sept. 23, 1971, Ser. No. 183,132
Int. Cl. A63d 5/04
U.S. Cl. 273—54 R 8 Claims

A bowling lane pinsetter masking unit including a transparent panel having a prismatic pattern impressed thereon and light sources positioned at varying distances therebehind, the character of the prism pattern and the location of the light



sources being such as to create a unique and attractive light pattern.

3,738,657
EXPANDABLE HUNTING ARROW
Ernest P. Cox, Box 154, Lola, Mont.
Filed May 9, 1972, Ser. No. 251,647
Int. Cl. F41b 5/02
U.S. Cl. 273—106.5 B 10 Claims

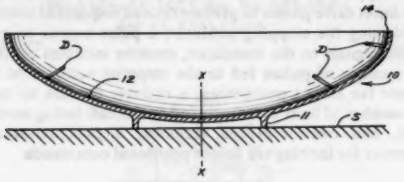


A hunting arrow has a tubular leading end portion provided with radially positioned, longitudinally extending slots. Mounted within the tubular portion are a rearwardly positioned fixed block and a forwardly positioned movable block. Blade elements comprising pivotally connected long and short sections extend between the blocks in alignment with the slots and are pivoted to the blocks, the long section being pivoted to the movable block and the short section being pivoted to the fixed block. Elastic bands are stretched between the two blocks and urge the movable block toward the fixed block. The blade elements while in longitudinal alignment tend to keep the movable block from moving. A release element is pivotally mounted to the short blade section and engages a slot in the longer blade section to keep the blade sections locked in longitudinal alignment. A projection on the release element projects outwardly of the tubular section and when engaged by the flesh of an animal upon arrow penetration releases the blade elements to be pivoted outwardly of the tubular section as the movable block moves rearwardly under the urging of the elastic bands.

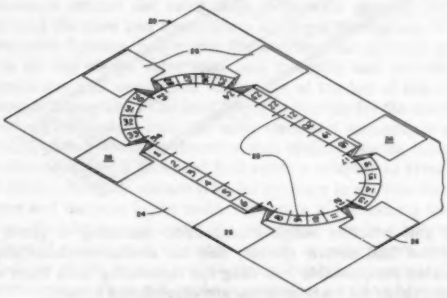
3,738,658
DISK ROTATING GAME
Robert E. Smith, 2429 Lyndale Avenue, Minneapolis, Minn.
Filed Sept. 17, 1971, Ser. No. 181,420
Int. Cl. A63b 67/08
U.S. Cl. 273—109 1 Claim

A game for individual use comprising an imperforate bowl adapted to be held in the hands ofthe user with the upper interior surface forming an upwardly opening concave annular track for rotating one or more disk-shaped objects of the size of coins by the user giving gyratory motion to the bowl, the radial curvature of the track gradually increasing from the

near horizontal at its center axis to the near vertical at its outer portion enabling the user to rotate several disks simultaneously upon the surface along paths spaced at varying distances from the axis, the bowl having a base adapted to support the bowl in upright position on a flat surface.



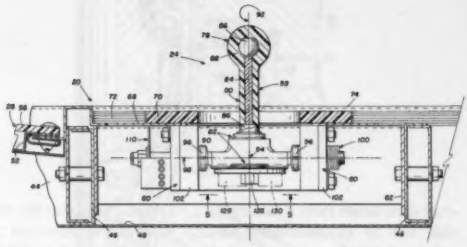
3,738,659
AUTO RACING BOARD GAME APPARATUS
Mildred F. Partridge, Route Box 62 BB, Montesano, Wash.
Filed Apr. 19, 1971, Ser. No. 135,173
Int. Cl. A63f 3/00
U.S. Cl. 273—134 AG **3 Claims**



Game apparatus providing racing cars assembleable from plural elements, a game box containing the elements in a concealed manner, a game board over which the assembled cars move, and play determining elements including randomly distributable monetary units and play directing cards. The game box has sets of part storage bins with opaque covers, each cover being provided with identification indicia. Play of the game proceeds by assembling the car playing elements by purchase with a random distribution of monetary units and thereafter moving the assembled elements about the playing board under certain pre-determined conditions in response to further random play of monetary units.

3,738,660
GOLF PRACTICING APPARATUS
Weldon K. Branz, Arlington; John C. Pennington, Dallas, and Leslie E. Terpening, Irving, all of Tex., assignors to Lectron Industries, Inc., Dallas, Tex.
Filed Feb. 16, 1971, Ser. No. 115,305
Int. Cl. A63b 69/36
U.S. Cl. 273—185 D **29 Claims**

A golf practicing apparatus includes a platform; a target mounted on the platform for receiving practice of golf shots; a display panel for indicating distance information, hook-slice information, and push-pull information; and electronic circuitry responsive to movement of the target for actuating the display panel. The target comprises a simulated golf ball and a stem which are supported for rotation about a first axis extending through the ball and the stem, a second axis extending perpendicularly to the first axis, and a third axis extending perpendicularly to the second axis and in the plane of the first axis. In operation, the speed of rotation of the target about the second axis is sensed to provide distance information, the direction and amount of rotation of the target about the first axis is sensed to provide hook-slice information, and the direction and amount of rotation of the target about the third axis is sensed to provide push-pull information. Rotation of the ball and stem about the first axis is detected by an assembly including a cam and conventional automobile breaker

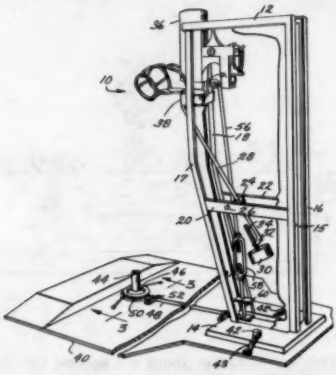


point assemblies. Rotation about the second axis is detected by a system including a lamp assembly, a phototransistor, and a rotatable opaque shutter including two spaced apart holes which permit two sequential light pulses to reach the phototransistor. Rotation about the third axis is detected by a system including a lamp assembly and a rotatable opaque shutter which uncovers one or more phototransistors arranged in a V-shaped array.

3,738,661
GOLF EXERCISING DEVICE
Bynum W. Moller, P. O. Box 688, Kerr County, Tex.
Continuation of Ser. No. 53,535, July 9, 1970, abandoned.
This application Nov. 22, 1971, Ser. No. 201,222
Int. Cl. A63b 69/36
U.S. Cl. 273—191 R **22 Claims**

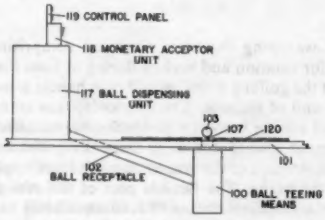
A golf exercising device is disclosed comprising an arm mounted for rotation and braked during at least the downswing part of the golfer's swing. A golf club handle is mounted on the lower end of the arm. The arm comprises an upper rigid section and a lower section which is flexible in torsion, flexible for movement toward and away from the golfer and rigid in the path of rotation of the arm to transmit force applied by the golfer to the brake. The flexible part of the arm provides a simple and convenient means of accommodating variations in the swing of the golfer. The arm is braked either by an adjustable friction arrangement of parts or by a hydraulic system wherein the flow of fluid through apertures is controlled to provide braking resistance only during the downswing.

3,738,662
AUTOMATIC GOLF BALL TEEING DEVICE
Charles L. Hodgin, 1402 South Seventh Street, Tucumcari, N. Mex.
Filed July 7, 1971, Ser. No. 160,492
Int. Cl. A63b 57/00
U.S. Cl. 273—201 **2 Claims**



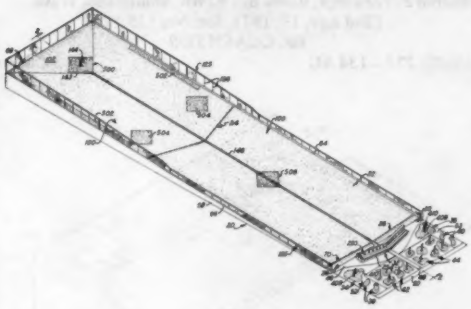
An automatic golf ball teeing device is provided having a frame and a ball guide tube mounted on the frame to which a portable ball storage rack may be attached to feed golf balls to the guide tube; a cup is attached to a pivotally movable transfer arm having a counter-weight at its end opposite the cup; when the transfer arm is in a raised position the cup will receive a ball discharged from the guide tube which will cause the transfer arm to pivot downwardly to discharge the ball through an adjustable wire guide track on to a golf tee; the golf tee is supported on a member which will pivot about a horizontal axis when the tee is struck by a golf club; a rod is pivotally mounted on a support and is rigidly attached to the pivoting member and extends to the base of the frame; a star wheel feeder is rotatably mounted adjacent the ball guide tube with the spokes of the wheels projecting into the tube; a spring biased hook latch controls rotation of the star wheel and a mechanical linkage is provided to disengage the latch hook from the star wheel in response to pivoting of the rod connected to the golf ball tee supporting member so that one ball at a time can be discharged from the ball guide tube into the cup.

3,738,663
DIGITAL CONTROLLED GOLF BALL TEEING APPARATUS
Joseph A. Gentiluomo, 1456 Belmont Avenue, Schenectady, N.Y.
Filed Mar. 29, 1971, Ser. No. 129,001
Int. Cl. A63b 57/00
U.S. Cl. 273—201 **12 Claims**



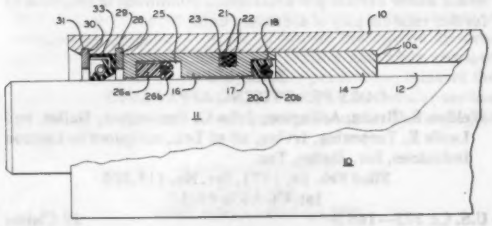
An automatic golf ball teeing apparatus functional in providing either golf practice or golf game mode of operation through use of digital control to yield multi-position tee elevation, thus enabling the golfer to perform both tee and fairway shots from the same tee. The control system consists basically of a stepping actuator to elevate the tee, a translator to convert input drive pulses to predetermined sequential commands for driving the stepping actuator, a pulse source to provide pulsed signals to the translator, counter modules to monitor the number of pulses fed to the stepping actuator to assure proper tee height positioning, a counter module to monitor the number of balls to be supplied to the ball teeing means per vend, and control means including a punched-tape programmer for inciting tee height positional commands.

3,738,664
GOLF PRACTICE RANGE
Maurice E. Peeples, P.O. Box 235, Kingsland, Ga.
Filed Oct. 21, 1970, Ser. No. 82,559
Int. Cl. A63b 67/02; B65g 25/08
U.S. Cl. 273—176 K **46 Claims**



A golf practice range construction including a gravity operated ball return system, and an electro-mechanically operated reciprocable ball drag for recovering balls from a driving range for transfer to the aforementioned system.

3,738,665
HYDRAULIC SEALS
Arthur Bilco, Greene, N.Y., assignor to The Raymond Corporation, Greene, N.Y.
Filed Jan. 3, 1972, Ser. No. 215,043
Int. Cl. F16j 15/32
U.S. Cl. 277—3 **8 Claims**

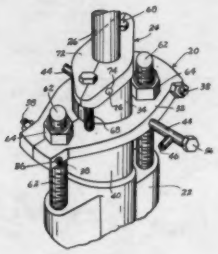


A tandem hydraulic seal assembly includes a graphite-filled Teflon inner seal and a molybdenum disulfide-filled polyurethane outer seal. The pressure drop across the inner seal limits the pressure on the outer seal to values low enough to prevent high friction. The outer seal compresses axially when pressure is applied to it to admit fluid to its grooved seat, and expansion of the outer seal when pressure is relieved pumps fluid back past the inner seal to the pressure chamber.

3,738,666
VALVE STEM SEAL ASSEMBLY

Harold R. Adams, R.R. 1, St. Francisville, Ill.

Filed May 15, 1972, Ser. No. 253,624
Int. Cl. F16j 15/40
U.S. Cl. 277—58 9 Claims

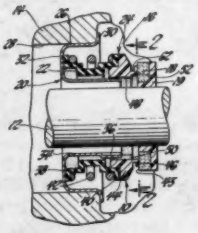


A valve stem seal assembly to prevent and stop leakage around a valve stem by encircling the valve stem at a bolted gland. The seal assembly is fitted on top of the bonnet to enclose the valve stem and a sealant compound is forced through an inlet opening into the seal assembly fitting into sealant channels around the valve stem to provide primary sealing around the stem and a secondary sealing at the bottom of the assembly housing fitting into the bonnet. The packing gland fits on top of the valve stem seal assembly and provides a secondary seal around the valve stem at the top of the valve stem seal assembly. The inlet fitting to provide for the conduction of the sealant into the valve stem seal assembly is provided with a T-fitting in order that sealant can be injected under pressure. A threaded bolt valve is adapted to close the T-fitting while the sealant is under pressure to provide for closure and increase in the sealant pressure in the closing operation. Besides use on valves the gland may also be used on all types of pumps such as piston pumps, also the steam cut off rods on steam pumps and electrical centrifugal pumps. The same procedure would apply as repacking a valve while under pressure.

3,738,667
SELF-ENERGIZING FACE SEALS

James D. Symons, Southfield, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 25, 1971, Ser. No. 109,450
Int. Cl. F16j 15/34, 15/54
U.S. Cl. 277—96 2 Claims

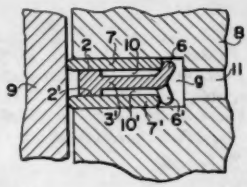


A face seal is provided with an annular groove on its fluid side adjacent the sealing contact surface for reducing the torsional rigidity of the latter under dynamic conditions such that the minute waves which are inherent in the contact surface are increasingly helically inclined by viscous shear forces in the direction of prevailing relative rotation to thereby provide increased hydrodynamic pumping action at the sealing interface.

3,738,668
OIL SCRAPING PISTON RING

Hiroshi Minegishi, Kawagoe, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Dec. 29, 1970, Ser. No. 102,491
Claims priority, application Japan, Dec. 29, 1969, 45/1545
Int. Cl. F16j 9/06
U.S. Cl. 277—141 1 Claim

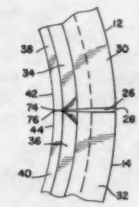


An oil scraping piston ring which has a steel sheet strip having opposite projections formed longitudinally at one side thereof and projecting flatly at both sides and also having a plurality of slots formed equidistantly from each other at the same side and having the same shape. A plurality of slots are equidistantly formed at the other side of said ring and alternatively with respect to the opposing slots, and also having a plurality of curved edges which are alternatively bent in opposite directions. This piston ring is to be inserted into a piston groove for scraping oil and for readily removing to pass the oil.

3,738,669
HALF SEAL UNITS

Kare Andersen, Elgin; Kenneth F. Gabrys, Steamwood, and Tyrone B. Ingo, Glen Ellyn, all of Ill., assignors to Chicago Rawhide Manufacturing Company, Chicago, Ill.

Filed Apr. 26, 1971, Ser. No. 137,156
Int. Cl. F16j 15/32
U.S. Cl. 277—199 17 Claims



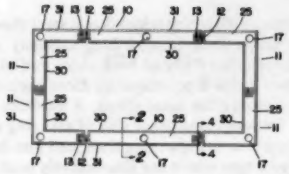
A segmented seal such as a half seal or other component of a so-called split seal. The individual segments are intended for subsequent assembly with other similar segments to form a complete annular seal having a so-called split line formed between the two segments where end faces thereof meet in opposed relation. Each end face has a configuration designed to provide a fluid tight connection at this so-called split line when two half seals, for example, are assembled and installed in a position of use within an engine or otherwise disposed so as to surround a relatively movable part. The seal at the split line is significantly improved without sacrificing the effectiveness of the primary and secondary seals formed respectively by the primary or wet lip and the radially outwardly directed mounting portion of the seal. Preferably, this is accomplished by a half seal in which each individual end face is comprised of radially outer and radially inner portions joined to each other along a line parallel to the shaft center line, with one end face portion lying in a first plane coincident with a true radial line extending outwardly from the seal center and the other end face portion lying in a plane slightly inclined with respect to

the first plane, with the included angle between the two planes being just less than 180°. The two planes preferably meet radially outwardly from the center substantially the same distance therefrom as does the outwardly facing part of the seal which will form the secondary seal. Prior to installation the portions of the end faces adjacent the lip lie short of an ultimate intended radial plane of contact between adjacent seal segment faces.

3,738,670
SECTIONAL GASKET

Jerry G. Jelinek, La Habra, and Charles R. McNamee, Los Angeles, both of Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Sept. 27, 1971, Ser. No. 183,975
Int. Cl. F16j *15/00, 9/16*
U.S. Cl. 277—199 22 Claims



A gasket of joined sections, each section having a tongue and recess with the tongue of one section receivable in the recess of another section, the tongues and recesses having engageable side walls of resilient material for preventing leakage through the joint, the recess side walls being parallel so as to be sealingly engaged by the tongue side walls regardless of the distance that the tongue is entered into the recess, and opposed faces of each section having raised resilient lips along the edges thereof with lip portions along the edges of the tongues and recesses being deformable into sealing engagement with each other.

3,738,671
RIDER-ACTUATED TOY

Edward F. Czepiga, Prospect Court, Woodbridge, Conn.

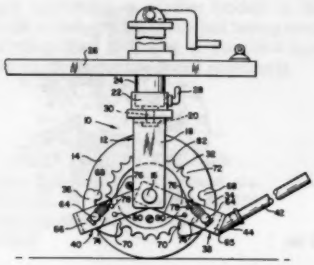
Filed Sept. 13, 1971, Ser. No. 179,715
Int. Cl. A63g *17/00*
U.S. Cl. 280—1.183 2 Claims

Versatile equestrian toy, for the provision of exercise, development of coordination, and entertainment, is adapted to be actuated by the rider, through the agency of fore and aft members pivotally attached to a body member, for galloping movements in either a forward or rearward direction. Movement of the mounted toy is effected by the properly timed forward and rearward leaning of the rider, controlling the position of tiltable seat means, coordinated with the application of pressure hand (bridle) and foot (stirrup) bars. Steering is accomplished by the pivotal movement of the fore or aft members in raised position; more limited rider action permits the use of the toy as a rocking horse. The structural and functioning parts are sturdy and uncomplicated, and are readily assembled to provide a durable and useful toy.

3,738,672
DOLLY FOR MOVING VEHICLES

Virgil D. Dalton, 2311 Burgener Boulevard, San Diego, Calif.

Filed Sept. 20, 1971, Ser. No. 181,871
Int. Cl. B60k *27/00*
U.S. Cl. 280—3 12 Claims

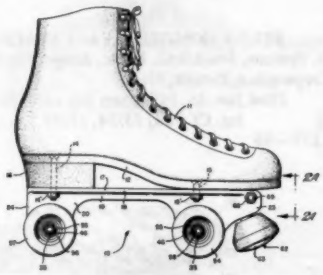


A dolly type device for manually moving house and boat trailers, aircraft and other vehicles has a single ground-engaging wheel mounted in a supporting frame adapted to be swivelly connected to the vehicle to be moved, the wheel and the supporting frame having mounted thereon elements of a pawl and ratchet type mechanism for driving the dolly either forwardly or rearwardly by means of a manually actuated jacking handle which also serves to steer the dolly. The driving mechanism also permits the dolly to freewheel in the selected direction of movement while preventing roll-back, and can be so adjusted as to prevent movement in either direction.

3,738,673
ROLLER SKATE CONSTRUCTION

Richard W. Iseman, Buffalo, N.Y., assignor to Micro-Star Skate Company, Inc., Lakeville, Conn.

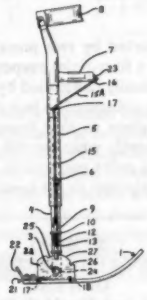
Filed May 17, 1971, Ser. No. 143,950
Int. Cl. A63c *17/02*
U.S. Cl. 280—11.28 12 Claims



A roller skate construction comprising a first embodiment having a cast body member having first and second spaced bores therethrough, a pair of axles mounted in said bores with each of said axles being mounted on pins inclined to the vertical in opposite directions with ball bearings securing central portions of the axles on the pins, and rubber bushings on opposite sides of the axle and interposed between the body member and the wheels for providing resistance to turning of the axle in response to plate lean. A second embodiment journals the axle in a truck which is supported relative to the plate by a ball having its center on a line extending through the point of contact between the wheel and the floor and the center of the axle. A third embodiment mounts the axle on a truck which is connected to the plate body by a pair of spaced ball connections fore and aft of the axle with the resistance provided by the ball connections being such that lateral forces

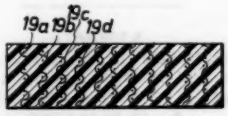
applied to the wheels at the floor cannot cause more turning of the wheel than corresponds to the plate lean then being effected. The skate construction also includes, as a modification, a plug insertable in the body member for mounting the pins for the axles of the first embodiment described above so that the angle which the pins make can be adjusted by rotating the position of the plug in the skate body member. The roller skate construction also includes an improved toe stop in which the bumper is mounted on a threaded shaft which is mounted into a split sleeve which is received into a split portion of the housing which can be clamped around the toe stop, with the sleeve always abutting a predetermined shoulder in the body member so that the toe stop can be removed and replaced quickly while maintaining the desired adjustments.

3,738,674
SKI EQUIPPED CRUTCH
Edward A. Pauls, Rte. 1, Box 615P, Excelsior, Minn.
Filed Dec. 3, 1971, Ser. No. 204,598
Int. Cl. A63c *11/22*
U.S. Cl. 280—11.37 B **7 Claims**



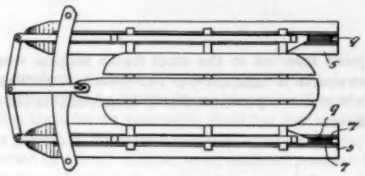
A ski equipped forearm crutch that converts from a downhill skiing aid to a walking aid by rotating the ski from a horizontal (skiing) position to a vertical (walking) position. A latch controlled remotely from the hand grip locks the short ski in the vertical position enabling the user to support his weight upon the rear end of the ski. A skid resistant member is attached at the rear of the ski to further aid walking on slippery surfaces such as packed snow or ice. A claw-like member, also fixed to the rear of the ski is employed as a means of acting as a brake to slow down a moving skier by rotating the ski to a position in which only the rear of the ski contacts the snow surface thereby causing the claw to dig into the snow surface and cause a retarding force.

3,738,675
SKI CORE OF PLASTIC FOAM MATERIAL
Osamu Hashimoto, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan
Filed Dec. 23, 1970, Ser. No. 101,075
Claims priority, application Japan, Dec. 28, 1969, 44/123785; Feb. 2, 1970, 45/10139; Feb. 10, 1970, 45/12673
Int. Cl. A63c *5/12*
U.S. Cl. 280—11.13 L **3 Claims**



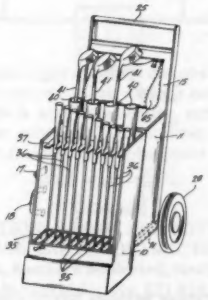
A ski core comprises an elongated core body of plastic foam material, and a screw-holding plate embedded in the core body at an intermediate portion along the length of the core body. The screw-holding plate tightly receives screws fastening a shoe-clamping device to the ski core and may be made of wood, aluminum, or wire netting. The screw-holding plate also serves for the formation of rigid skin layers of the core body around the plate when the core body is molded with the plate contained within the mold cavity.

3,738,676
SLED SKI
Albert E. Hand, 320 Camp Street, Plainville, Conn.
Filed Dec. 30, 1968, Ser. No. 787,830
Int. Cl. B62b *17/02*
U.S. Cl. 280—22 **4 Claims**



A sled ski which can be easily attached to the flexible runners of conventional sleds for use on snow and which will permit flexing of the runners for steering. Said ski being also adapted to bank with the steering of the sled.

3,738,677
CONVERTIBLE GOLF CART
James Renock, 3625 W. Ruskin Avenue, Milwaukee, Wis.
Filed May 27, 1971, Ser. No. 147,412
Int. Cl. B62b *1/04*
U.S. Cl. 280—37 **7 Claims**

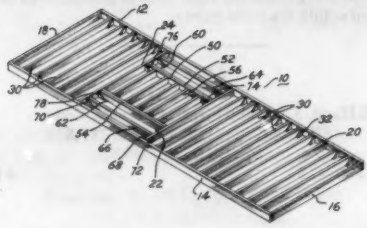


A wheeled golf cart which can be manually pulled over a golf course for transporting the golfing equipment. The entire cart can be converted into a closed container for the golfing equipment for storage. A hinged door serves as a closure for storage purposes and as a handle for manipulating the golf cart when it is transporting equipment over a golf course.

3,738,678
FLOOR FRAME STRUCTURE
Roger A. King, and Keith O. Burton, both of Elkhart, Ind., assignors to Bur Kin Homes Corp., White Pigeon, Mich.
Filed July 8, 1971, Ser. No. 160,603
Int. Cl. B62d *21/00*
U.S. Cl. 280—106 **8 Claims**

A floor frame structure for mobile or modular homes, trailers, and similar buildings, having a section constructed of

steel perimeter side members and front and rear cross members and intermediate cross members. The perimeter and intermediate cross members contain hangers for receiving



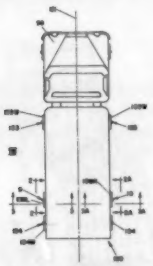
wooden joists inserted in the steel frame section when the building structure is constructed. The members between said cross members are so positioned as to form pockets for wheels of the vehicle.

3,738,679

AUXILIARY RETRACTION ASSEMBLY FOR PNEUMATICALLY SUSPENDED TANDEM-AXLE TYPES

William E. Jackson, 3726 Ernst Street, Omaha, Nebr.

Filed May 15, 1972, Ser. No. 253,291
Int. Cl. B60g *11/46*
U.S. Cl. 280—124 R 8 Claims



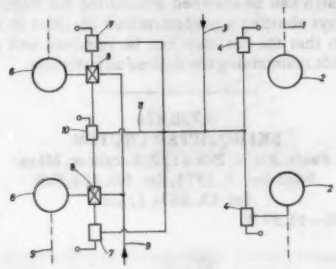
For overland drayage vehicles having one or more pneumatically suspended tandem-axles (traditionally comprising a fulcrum supported beam and air-bellows), there is provided an auxiliary retraction assembly that automatically raises the tandem-axle wheels from the underlying substrate whenever the vehicle operator (during periods of reduced cargo) purposely reduces the air-bellows pressure. Preferred embodiments of the auxiliary retraction assembly comprise: an elongate leaf-spring including a restrained-length portion maintained as through a novel bracket at constant elevation and also including a flexural-length portion terminating remote from the restrained-length between the beam fulcrum and the air-bellows, and an upright connector such as a novel pivotal link actuatably extending from the leaf-spring flexural-length to the tandem-axle whereby the leaf-spring flexural-length becomes progressively lower as the air-bellows is inflated and becomes progressively higher as the air-bellows is purposely deflated whereupon a finite spatial gap is created between the tandem-axle wheels and the underlying substrate.

3,738,680

PNEUMATIC SUSPENSION SYSTEM FOR VEHICLES

Hans Pollinger, Munich; Alfred Pohla, Neufahrn, and Hans Kirchlechner, Munich, all of Germany, assignors to Knorr-Bremse GmbH, Munich, Germany

Filed Apr. 7, 1971, Ser. No. 131,938
Claims priority, application Germany, Apr. 9, 1970, P 20 16 959.9
Int. Cl. B60g *17/04*
U.S. Cl. 280—124 F 7 Claims



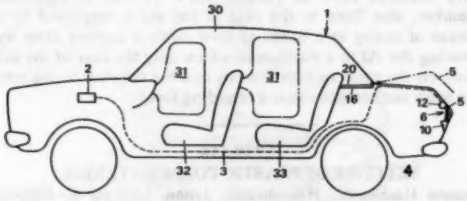
A vehicle is supported by two pneumatic bellows at each end thereof to form a four-point suspension in which each of the bellows is individually controlled by its own control valve. Switching valves are connected to two of the bellows and their respective control valves so that these two bellows may be operated together jointly whereby the entire vehicle is then supported by a three-point suspension. The switching means may be actuated in response to the speed of the vehicle.

3,738,681

DEVICE FOR REGULATING PRESSURE IN THE INSIDE OF A CAR

Akihiro Wada, Aichi, and Yuichi Sorimachi, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Aichi-ken, Japan

Filed July 9, 1971, Ser. No. 161,217
Claims priority, application Japan, Oct. 14, 1970, 45/90203
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB 3 Claims



A device for regulating pressure in the inside of a car comprising means for unlocking the door of the trunk of the car upon receipt of a signal from collision sensing means or collision predicting means, and communication means for establishing communication between the inside of the car and the trunk.

3,738,682

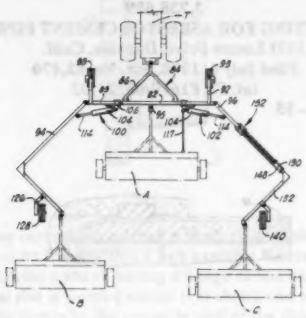
CLOSE COUPLED PULLING HITCH ASSEMBLY

Orville A. Ritter, 1401 Oklahoma Boulevard, Alva, Okla.

Filed Nov. 30, 1971, Ser. No. 203,269
Int. Cl. B62d *53/00*
U.S. Cl. 280—413 19 Claims

A close coupled pulling hitch assembly including a horizontally extending, transverse draw bar, hitch means on one side

of the draw bar for connecting a self-propelled vehicle thereto and coupling means on the opposite side of the draw bar for connecting a first agricultural implement to the draw bar. Pivotally connected to one or both end portions of the transverse draw bar is at least one side bar which is connected for pivotation about a substantially horizontal axis. A generally horizontally extending coupling bar is connected to each of the side bars, and is horizontally spaced from the transverse draw bar to accommodate the first described agricultural implement. Coupling means is provided on each coupling bar for coupling thereto, an agricultural implement disposed on the opposite side of the respective coupling bar from the transverse draw bar. Means is provided for pivoting each side bar and its associated coupling bar about a substantially vertical axis and relative to the transverse draw bar to laterally displace the agricultural implements coupled to the coupling bars relative to the agricultural implement coupled to the draw bar. Ground engaging wheels are mounted on at least one of the described bars.

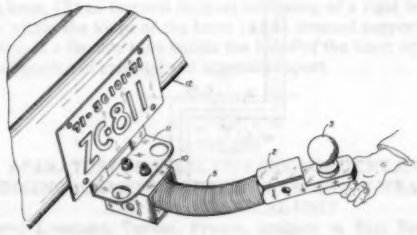


3,738,683

AN EXTENDIBLE RETRACTABLE VEHICULAR HITCH ASSEMBLY

James E. Tate, 926 Regency Drive, Richardson, Tex.

Filed July 28, 1971, Ser. No. 166,869
Int. Cl. B60d *1/06*
U.S. Cl. 280—478 R 4 Claims



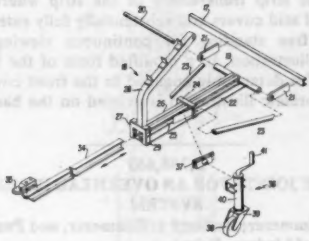
An extendible retractable vehicular hitch assembly with means to extend the vehicular hitch in multi-directions, the said extendible vehicular hitch having mounting support means and means to hold it in a retracted position.

3,738,684

TRANSPORTABLE VEHICLE

Grady L. Lusk, Route 6, Canton, Ga.

Filed Sept. 17, 1971, Ser. No. 181,462
Int. Cl. B60d *1/14*
U.S. Cl. 280—491 R 3 Claims



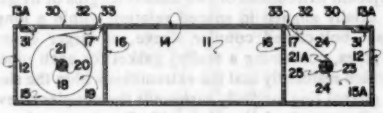
This disclosure relates to a transportable vehicle comprising a vehicle body and a trailer frame assembly. The trailer frame assembly includes an extensible draft bar that may be pivoted from a generally horizontal position where it is adapted to be connected to a draft vehicle, to an inclined position folded-up against the vehicle body so that it is out of the way when so desired.

3,738,685

NOTE PAD DEVICE USING PAPER ROLLS

David Penner, 508 Ash St., Winnipeg, Manitoba, Canada

Filed Oct. 21, 1971, Ser. No. 191,261
Int. Cl. B42f *17/28*; B65h *17/00*
U.S. Cl. 281—8 4 Claims



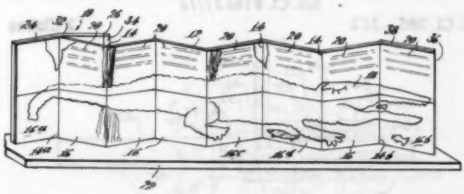
A casing contains a pair of rollers one at each end and a roll of paper is placed on one roller, extends across the top panel of the casing which acts as a writing surface, and is then wound upon the other roll. Removable end panels and detachable rollers facilitate the replacement of the paper roll.

3,738,686

COMBINATIONAL BOOK FOR BOTH NORMAL READING AND PANORAMIC DISPLAY

Douglas C. Morse, Southern Boulevard, Newbury, Mass.

Continuation-in-part of Ser. No. 831,616, June 9, 1969, abandoned. This application Mar. 26, 1971, Ser. No. 128,489
Int. Cl. B42d *15/00*; A47b *23/00*
U.S. Cl. 283—63 9 Claims



A book construction having a spine foldably joining front and back covers. A plurality of leaves are foldably joined

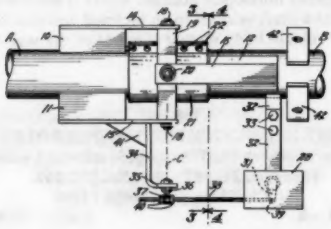
together to form an elongated accordion-foldable strip. A continuous panoramic illustration and text relating to the panoramic illustration are applied to the leaves of the strip. The first leaf of the strip is fixedly or detachably engaged to the front cover. The last leaf is detachably engaged to the back cover for conventional, leaf by leaf reading of the book with the leaves held between the covers. Means are provided for stiffening the strip transversely of the strip whereby when pulled out of said covers and substantially fully extended said leaves are free standing for continuous viewing of said panoramic illustration. In a modified form of the invention, the first leaf is detachably engaged to the front cover, and a second panoramic illustration is printed on the back side of the strip.

3,738,687

FLEXIBLE JOINTS FOR AN OVERHEAD IRRIGATION SYSTEM

Arthur L. Zimmerer; Bernard J. Zimmerer, and Paul B. Zimmerer, all of Lindsay, Nebr.

Filed Nov. 23, 1970, Ser. No. 92,089
Int. Cl. F16l *55/00*
U.S. Cl. 285—5 **13 Claims**



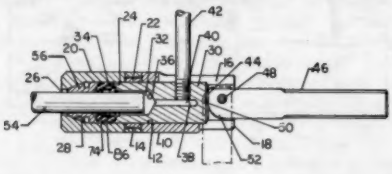
The adjacent extremities of two similar lengths of irrigation pipe are axially aligned in spaced relation within a longitudinally-split bolt-closed coupler sleeve, of larger diameter than the pipes, containing a sealing gasket for each pipe extremity which resiliently seal the extremities within the sleeve. An open gimbal ring medially surrounds the coupler sleeve in diametrically-spaced relation therewith. Bracket members are mounted on the opposite sides of each pipe extremity in longitudinally spaced relation to the coupler sleeve and a pair of arms extend from each bracket member to opposite pivotal connections with the gimbal ring, the axes of the pivotal connections on one pair being circumferentially spaced on said gimbal ring at 90° from the pivotal connections of the other pair to enable the pipe lengths to freely, relatively and arcuately swing in any desired direction. A signal device is trained between the extremities of the pipe lengths to give a signal relative to the arc of swing between said extremities.

3,738,688

QUICK MOUNT FITTING

William H. Racine, Lakeside, Mich., assignor to Test Tools, Inc., Stevensville, Mich.

Filed May 10, 1971, Ser. No. 141,480
Int. Cl. F16l *37/18*
U.S. Cl. 285—312 **2 Claims**



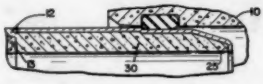
A fitting to be quickly mounted to smooth wall tubes, said fitting having an entry for the tube end, an annular seal within said body, and a ram element within said body which is translated to sealing and release positions by a quick operating actuating means. The fitting may be provided as a dead head or may be coupled to a second conduit for conveying fluids therethrough; and the fitting may be adapted for high pressure fluid conveyance by including within the body a split collet member cooperating with said seal to enhance sealing action under high pressure.

3,738,689

FITTING FOR ASBESTOS CEMENT PIPE

Jay S. Forni, 1101 Leema Drive, Danville, Calif.

Filed July 6, 1970, Ser. No. 52,470
Int. Cl. F16l *9/08, 21/02*
U.S. Cl. 285—55 **5 Claims**



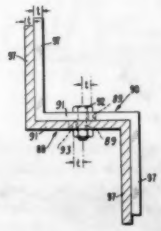
Fittings for asbestos cement pipe are made utilizing cement-lined iron pipe sections, by welding to each end of each section a generally cylindrical sleeve of sheet metal having a portion of the same diameter as the iron pipe succeeded by a spin-formed section of smaller diameter meeting the other one at a step-gasket shoulder, the spin-forming providing increased tensile strength to hold the portion in round, this portion being succeeded by a spin-formed tapered terminal portion ending in a radial lip. After the sleeves are welded to the iron pipe section, they are interiorly lined with cement, using the lips to help hold the cement in place at each end. Then a coupler of asbestos cement having a pair of interior annular grooves, each with a gasket, is placed over the sleeve, and one of the gaskets is abutted against the shoulder.

3,738,690

SPLICABLE STRUCTURAL MEMBER

James C. White, P.O. Box 5496 Station B, Greenville, S.C.

Continuation of Ser. No. 847,179, Aug. 4, 1969. This application July 7, 1971, Ser. No. 160,519
Int. Cl. F16b *7/18*
U.S. Cl. 287—189.36 F **1 Claim**



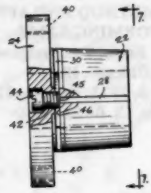
A string of nested, overlapping structural members for supporting strand elements by joining successive members lying in parallel planes. All members are provided with a series of holes for receiving fasteners, each series of holes comprising an outer set and an alternate inner set disposed along laterally spaced centerlines such that the inner holes of an upper member are registrable with the outer holes of an underlying member. In this way, any member may be selected for either disposition to obtain the desired relation within a string.

3,738,691

SPLIT CONTRACTIBLE BUSHING

David Firth, 1441 E. Jefferson Boulevard, South Bend, Ind.

Filed Sept. 22, 1971, Ser. No. 182,579
Int. Cl. F16d 1/06
U.S. Cl. 287—52.06 3 Claims



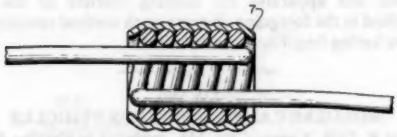
A bushing comprising part of a shaft-mountable unit which is adapted to be fitted within a hub having a tapered bore. The bushing includes a shank having a flange at one end thereof. A longitudinal slot is formed within that shank and extends from adjacent the flange to the opposite end of the shank. A transverse, part-circumferential slot is formed in the shank adjacent the flange in communication with the longitudinal slot.

3,738,692

PRE-TIED NAIL KNOT

Leon L. Martuch, and Donald L. Schmidt, both of Midland, Mich., assignors to Scientific Anglers, Inc., Midland, Mich.

Filed July 16, 1971, Ser. No. 163,357
Int. Cl. D04g 5/00
U.S. Cl. 289—1.2 12 Claims



A pre-tied, untightened, fisherman's nail knot supported by (1) an external coating around and between the surface of the loops of the knot; (2) an external support consisting of a tubing shrunk so as to contact the outer surfaces of the loops of the knot; (3) an internal support consisting of a rigid tube or bar within the loops of the knot; (4) an internal support consisting of a flexible tube within the loops of the knot; or (5) a combination of external and internal support.

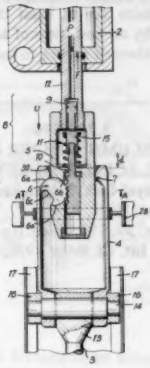
3,738,693

APARATUS FOR SELECTIVE ENGAGEMENT AND DISENGAGEMENT BETWEEN A TRACTION MEANS AND A MECHANICAL UNIT

Pierre Loustalet, Tarbes, France, assignor to Etat Francais represente par le Ministre Charge de la Defense Nationale Delegation Ministerielle pour l'Armement, Paris, France

Filed June 16, 1971, Ser. No. 153,711
Claims priority, application France, June 17, 1970, 7022291
Int. Cl. F16b 7/00
U.S. Cl. 287—119 R 14 Claims

A locking head is secured to a traction means and permits coupling and uncoupling of the traction means to a guide housing secured to a mechanical unit. The locking head comprises a body provided with rotatable friction rolls automatically placed in locked position when the head is inserted into the housing, whereby the traction means and mechanical unit



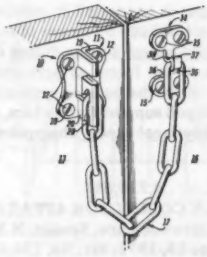
are engaged. The rolls can be rotated to unlocked position to permit disengagement by withdrawal of the locking head from the guide housing.

3,738,694

CHAIN DOOR FASTENER

George Banse, Rock Falls, Ill., assignor to National Manufacturing Co., Sterling, Ill.

Filed Aug. 16, 1971, Ser. No. 171,977
Int. Cl. E05c 17/36
U.S. Cl. 292—264 10 Claims



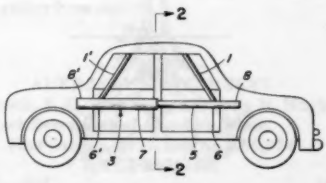
A chain door fastener includes a door mounted bracket slotted to receive a link of a link chain fixed to a jamb mounted bracket, the slot being so configured as to prevent simple lifting of the link out of the slot and to prevent removal of the link from the slot while the chain is under tension.

3,738,695

REMOVABLE SIDE CAR BUMPER

Robert B. McBee, c/o Briones Co., Inc. 5760 Broadway, Roslyn Heights, N.Y.

Filed Oct. 19, 1971, Ser. No. 190,596
Int. Cl. B60J 11/00; B60r 19/08, 27/00
U.S. Cl. 293—1 7 Claims



A vehicle impact protection device including an outer tube having a predetermined internal diameter and at least one

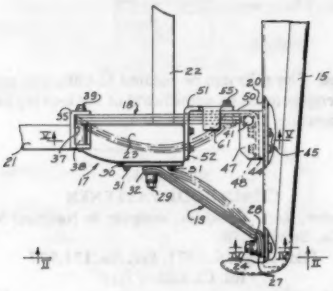
inner tube having an external diameter of less than that of the outer tube. The inner tube or tubes are operative to be moved into and out from their respective outer tubes thereby forming telescopic means. There are at least two suspension means each being attached by an end thereof to the outer tube while an opposite free end thereof serves to secure the entire device to the vehicle.

3,738,696

BUCKLING COLUMN BUMPER SYSTEM WITH VERTICAL DISPLACEMENT-PREVENTING MEANS

John McLauchlan, Royal Oak, Mich., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Filed Apr. 30, 1971, Ser. No. 138,879
Int. Cl. B60r 19/06
U.S. Cl. 293—70 22 Claims



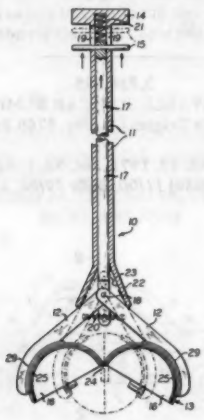
A horizontal bumper is supported in relation to a support such as a vehicle frame directly by means of resilient buckling column bars for impact energy storing during displacement of the bumper relative to the frame as permitted by the bars, whereafter the bars return the bumper system to normal position. Jacking and anti-roll support for the bars, as well as stress limiting means, and frictional energy absorption are provided.

3,738,697

PORTABLE COLLECTOR APPARATUS

Edward Kahan, 8 Alderwood Lane, Syosset, N.Y.

Filed June 18, 1971, Ser. No. 154,471
Int. Cl. A47f 13/06
U.S. Cl. 294—19 R 6 Claims



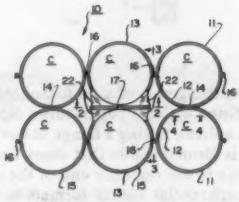
A portable collector apparatus having a disposable container with hingedly connected halves releasably supported by tongs at the end of an extended handle. A slide rod operable from the other end of the handle effects pivoting of the tongs to swing the container halves from an opened configuration to a closed, self-locking configuration for receiving and enclosing matter to be collected.

3,738,698

FINGER HOLD DETAIL FOR ARTICLE GROUP CARRIERS AND METHOD AND APPARATUS FOR FORMING SAME

Charles Robert Helms, Barto, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed Feb. 8, 1971, Ser. No. 113,544
Int. Cl. B65d 71/00
U.S. Cl. 294—87.2 2 Claims



An article group carrier formed from webs connected to define a plurality of single article supporting loops arranging the articles in a pair of side-by-side rows. The centermost of the side-by-side loops have the webs forming the same partly slitted transversely, and also have such loops joined along a length thereof, so that upon tensioning of the side-by-side loops about the centermost of the article, elements are presented which enable the digits of the hand to extend in contact therewith in what may be considered an operation akin to grappling to transport the article group.

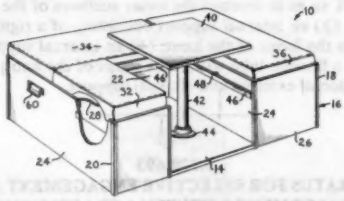
The invention herein also comprehends an improved method and apparatus for forming carriers of the kind described in the foregoing abstract, such method resulting in a carrier having finger holds as described.

3,738,699

MODULAR CAMPING UNIT FOR VEHICLES

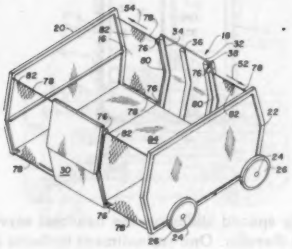
Robert P. Fain, Kansas City, Mo., assignor to Coming Enterprises, Kansas City, Mo.

Filed July 23, 1971, Ser. No. 165,524
Int. Cl. B60p 3/32
U.S. Cl. 296—23 R 8 Claims



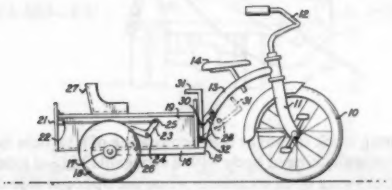
A modular multipurpose camping unit permits conversion of a conventional truck type vehicle into a camper vehicle. A planar base member is adapted to be disposed on the floor of the vehicle and has rigidly secured thereto support structure which rises above the base member to present a seat. The structure is formed in a U-shaped configuration with a pair of opposed legs and an interconnecting bight portion. In the cutaway section between the legs a planar component is disposed which can either be placed in raised relationship to the seat to present a table or moved into planar alignment with the seat whereby to cooperate with the latter and present a platform surface. The surface is covered with a cushion material which serves as a bed or as a play area for children.

3,738,700
COMBINATION BABY CARRIAGE AND PLAYPEN
Stephen Terry, 1170 Ocean Parkway, Brooklyn, N.Y.
Filed Sept. 1, 1971, Ser. No. 176,931
Int. Cl. B60p *3/34*
U.S. Cl. 296—27 3 Claims



A baby carriage which converts into a playpen by lateral movement of the opposite sides thereof, and including crossing support members beneath the main or medial body section that are spring-biased to assist in said lateral movement of the sides. Said crossing support members are also advantageously located in supporting relation to the bottom wall of the main body section.

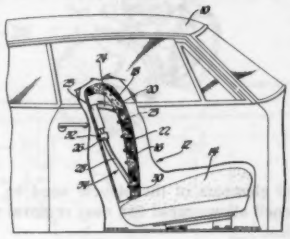
3,738,701
VELOCIPEDE EQUIPPED WITH DUMP BODY
Joseph Marion Holloway, 311 W. 9th St., Sedalia, Mo.
Filed July 2, 1971, Ser. No. 159,422
Int. Cl. B60p *1/12, 1/28*
U.S. Cl. 298—19 R 4 Claims



A tricycle is provided with a depressed rear frame portion for the support of a pivoted dumping body including a tailgate. A simplified manual linkage on the tricycle frame in ready reach of the rider enables the dump body and tailgate to be operated by the rider while on the seat of the tricycle or velocipede.

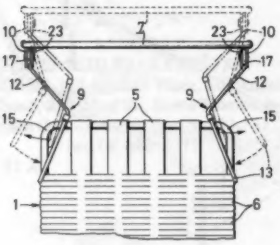
3,738,702
MEANS FOR COOLING AND HEATING A SEAT STRUCTURE
James W. Jacobs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Mar. 15, 1972, Ser. No. 234,908
Int. Cl. A47c *7/74*
U.S. Cl. 297—180 3 Claims

A seat structure such as a vehicle seat or a portable pad capable of being placed upon a seat structure including a heat pipe assembly having an elevated portion responsive to body heat of an occupant in the area where the body engages the seat or pad thereby heating and cycling a volatile fluid in the heat pipe to the elevated portion which is in thermal communication with the ambient environment for continuously cooling the seat or pad area engaged by the occupant. A selectively energized heater can be disposed within or near the volatile fluid for activating the heat pipe cycle and continuously warming the body engaged surfaces of the seat or pad as desired.



The heat pipe can be formed as an integral part of the pad or the seat structure by incorporating a sealed impermeable plastic passage containing the appropriate volatile fluid.

3,738,703
SUNSHADE FOR FOLDABLE CHAIR OR BED
Takateru Kunimatu, Osaka, Japan, assignor to Kunimatu Sangyo Co. Ltd., Osaka, Japan
Filed Dec. 30, 1971, Ser. No. 213,897
Int. Cl. A47c *7/10, 29/00*
U.S. Cl. 297—184 1 Claim



A sunshade to be mounted on the back-rest member of a foldable chair or bed such as a three-fold chair primarily for an outdoor use. The sunshade comprises an awning sheet frame and a pair of support legs pivoted to one end thereof to support the frame shiftably in accordance with the reclination of the back-rest member and the direction of the striking sunlight. The support legs are formed at their lower parts with elongated ringlike portions in facing relation to each other for clamping the opposite shoulders of the back-rest member. The distance between a pair of the opposing support legs is smaller at their intermediate portions than the width of the back-rest member, whereby the support legs are resiliently urged inward about the pivoted pprtions when clamping the shoulders of the back-rest member from outside.

3,738,704
AUXILIARY BICYCLE SEAT
Lloyd H. Smith, P. O. Box 1092, and John H. Hughes, 6111 Central Park Drive, both of Aberdeen, Wash.
Filed July 26, 1971, Ser. No. 165,974
Int. Cl. B62j *1/00*
U.S. Cl. 297—195 10 Claims

An auxiliary seat for use on either a male or female bicycle which receives its vertical support from the neck of the bicycle. The seat, which may be fabricated of one piece, slips over

the neck of the bicycle and is clamped in place. The fact that the bicycle need not be altered in any way and further none of

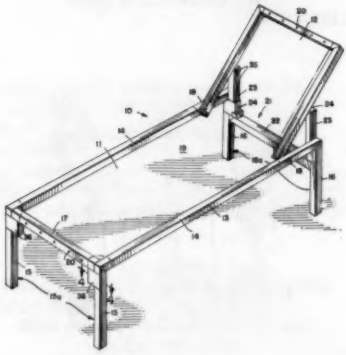
the structural elements of the bicycle need be removed or even unloosened allows rapid and easy removal and replacement of the seat.

3,738,705

CONVERTIBLE BUNK BED AND LOUNGE CHAIR ASSEMBLY

Max Lee Hill, Somerset, Pa., assignor to The Coleman Company Inc., Wichita, Kans.

Filed Aug. 11, 1972, Ser. No. 279,965
Int. Cl. A47c 4/02, 1/024
U.S. Cl. 297—377 **3 Claims**



In a convertible bed and lounge chair having a generally horizontal bed portion with an adjustable head-rest connected thereto, an improved headrest support assembly which comprises a U-shaped member adapted to be slidably received between the rearward pair of legs of the bed portion, the cross-piece of the member abutting each of the rearward legs to hold them in a spaced-apart relation, each arm of the U-shaped member extending upwardly to support the backrest and to selectively pivot it to desired angles relative to bed portion as the U-shaped member is vertically adjusted.

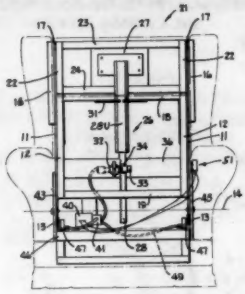
3,738,706

MOTOR DRIVEN HEADREST AND BACK FOR RECLINER CHAIR

Daniel F. Caldemeyer, 4300 Jennings Lane, Evansville, Ind.

Filed Aug. 30, 1971, Ser. No. 175,997
Int. Cl. A47c 7/36
U.S. Cl. 297—410 **26 Claims**

A chairback has adapter plates pivotally attached to each side thereof and readily securable to a chair base or seat mount structure. Sector gears on the chairback engage pinions in gearheads mounted to the adapter plates for motor driven tilting of the chairback. A headrest linearly movable vertically in the chairback has a gear rack post extending into the chairback centrally thereof and engaged by a pinion in a gearhead secured to the lower back frame to drive the headrest up or



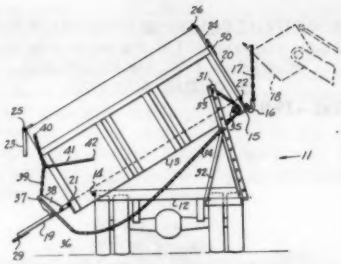
down. Widely spaced slides on the headrest serve as guides and supports therefor. One embodiment includes a chairback cushion vertically movable in response to headrest extension.

3,738,707

DEVICE FOR DUMPING BEET BOXES

George Bieber, Route 2, P.O. Box 116, Fairview, Mont.

Filed Dec. 29, 1970, Ser. No. 102,449
Int. Cl. B65g 9/00
U.S. Cl. 298—18 **3 Claims**



A dump truck for sugar beets consisting of a vehicle having a longitudinally hinged body with a swingable hinged side gate which can swing open by gravity when the opposite side of the body is raised. Sprocket chains connect the gate to the top ends of upstanding fixed bars on the truck frame adjacent the liftable side of the body, the chains passing around rollers journaled on the hinged body outwardly adjacent the fixed bars and being so arranged as to develop tension in the chains and to swing the side gate to vertical closed position when the hinged body is lowered to its normal position.

ERRATUM

For Class 298—19 see:
Patent No. 3,738,701

3,738,708

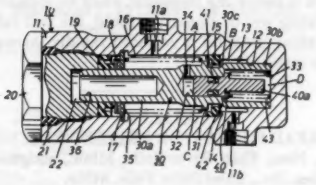
BRAKE PRESSURE CONTROL VALVE

Hiroshi Kawaguchi, and Ryujiro Furukawa, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan

Filed Mar. 13, 1972, Ser. No. 233,975
Claims priority, application Japan, Oct. 11, 1971, 46/80053
Int. Cl. B60t 13/00
U.S. Cl. 303—6 C **9 Claims**

A brake pressure control valve for a vehicle brake system which comprises a cylinder, a differential piston slidably

disposed within the cylinder to subdivide the cylinder interior into first and second chambers facing piston surfaces of different areas and connected respectively to a master cylinder and to rear-wheel brake cylinders, a valve cooperable with the piston to control the intercommunication between the two chambers by way of hydraulic pressure differences produced by the piston, and a first spring biasing the piston to keep the valve normally open. The brake pressure control valve further



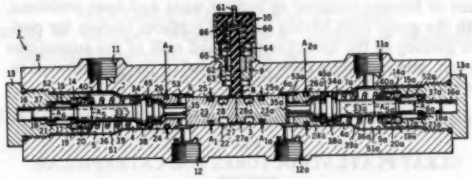
comprises an assistant plunger slidably engaged within the piston to subdivide the piston interior into third and fourth chambers, the third chamber being in open communication with the first chamber and the fourth chamber being connected to the second chamber, and a second spring normally biasing the plunger in a direction to axially unite the plunger with the piston, the urging force of the second spring being smaller than that of the first spring.

3,738,709

CONTROL VALVE

Stanley L. Stokes, Florissant, Mo., assignor to Wagner Electric Corporation, Newark, N.J.

Division of Ser. No. 8,480, Feb. 4, 1970, Pat. No. 3,627,385. This application Sept. 8, 1971, Ser. No. 178,715
Int. Cl. B60t *8/26*
U.S. Cl. 303—6 C **14 Claims**



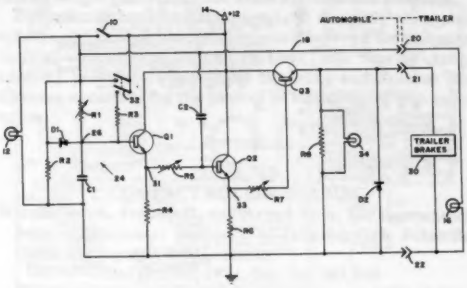
A control valve for use in a split braking system having an indicating member movable from a normal position to a translated position in the event of the failure of one of the separately supplied fluid pressures acting thereon. A proportioning member is biased toward the indicating member and movable in response to a predetermined value of the other supplied fluid pressure toward metering engagement with the indicating member in its normal position to thereafter effect a metered applied fluid pressure in a predetermined ratio with the other supplied fluid pressure. The proportioning member is provided with a pair of opposed areas respectively subjected to the other supplied and applied fluid pressures to effect the predetermined ratio, and a third area is also provided on said proportioning member for subjection to the other supplied fluid pressure and additive to one of the opposed areas to alter the predetermined value of the other supplied fluid pressure at which the proportioning member is actuated to effect metering engagement with the indicating member in its translated position.

3,738,710

ELECTRONIC TRAILER BRAKE ACTUATOR

Jordan J. Pokrinchak, Shelton, and Charles J. Corris, Bridgeport, both of Conn., assignors to Jordan Research Corporation, Shelton, Conn.

Filed Feb. 25, 1971, Ser. No. 118,883
Int. Cl. B60t *13/74*
U.S. Cl. 303—20 **10 Claims**



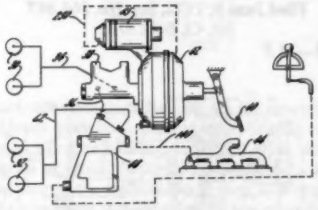
A trailer brake actuator is normally signaled into operation upon energization of the brake light circuit in the towing vehicle. Closure of the brake light switch supplies charging current to a capacitor, and the increasing voltage developed thereacross is amplified and used to control the conductance of a series current regulator connected in an energizing circuit for the trailer brakes. A separate switch permits more rapid charging of the capacitor and actuation of the trailer brakes independently of the vehicle brakes.

3,738,711

ANTI-SKID BRAKE SYSTEM

Edward A. Rockwell, 167 Ashdale Place, Los Angeles, and Harvison C. Holland, 230 22nd St., Santa Monica, both of Calif.

Filed Oct. 26, 1970, Ser. No. 83,732
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 A **17 Claims**



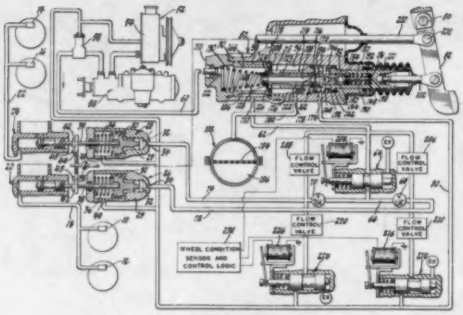
A power braking system is disclosed for vehicles producing a maximum stopping force for any given road condition while preventing the vehicle from skidding. A pressure proportioning device varies the ratio of pressures between the front and rear brake lines of the vehicle as braking increases to achieve maximum stopping force for any given road condition at both the front and rear wheels. When increasing brake line pressure produces braking forces which exceed the maximum achievable stopping forces as determined by tire-road coefficient of friction, and the wheels start to lock-up, the resulting reduction in deceleration is detected by deceleration responsive control apparatus which operates the power booster of the power brake system to momentarily reduce the brake line pressures both front and rear which allows the wheels of the vehicle to resume turning, and then reapplies the brake line pressure, the cycle being repeated. The attendant result is the modulation of the braking force about the maximum for both front and rear wheels at the same time.

3,738,712

ANTI-LOCK BRAKE SYSTEM

Donald M. Flory, Arcanum, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 7, 1971, Ser. No. 141,131
Int. Cl. B60t 8/12
U.S. Cl. 303—21 F 5 Claims



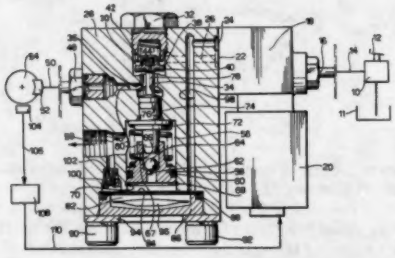
An anti-lock brake system includes separate hydraulically boosted master cylinders for each wheel brake or set of wheel brakes to be controlled, an operated actuated brake control valve assembly functioning to channel pump generated fluid pressure to the plurality of hydraulic boosters for simultaneous actuation thereof and including valve means functioning to charge an accumulator with fluid pressure and then discharge the accumulator pressure for booster actuation in the event of a loss of pump generated pressure, a fail safe anti-lock control valve circuit controlling the brakes by releasing and reapplying the hydraulic pressure to the hydraulic boosters in response to the sensed wheel condition, and auxiliary mechanical actuating means for brake actuation subsequent to loss of pump generated fluid pressure and dissipation of the accumulator pressure.

3,738,713

VEHICLE ANTI-SKID BRAKING APPARATUS

Marco Peruglia, Turin, Italy, assignor to FIAT Societa per Azioni, Turin, Italy

Filed June 8, 1972, Ser. No. 260,867
Int. Cl. B60t 8/12
U.S. Cl. 303—21 F 3 Claims



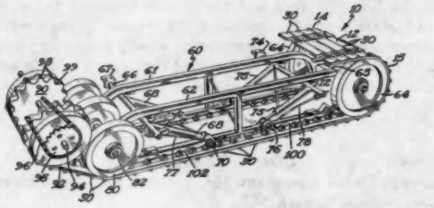
A distributor for an hydraulic braking system having an anti-skid device is disclosed. The distributor operates to route the hydraulic braking fluid through different paths, so that the device has two different modes of operation, in dependence on whether a vehicle to which the braking system is fitted is travelling over wet or dry ground; this is detected by the different braking pressures which are required to cause the wheels to reach an incipient skid state. The distributor comprises three chambers two of which communicate through a ball valve and the third of which is connected to the brake actuators of the system and to an electrovalve which is controlled by an antiskid control device to connect the said third chamber to the master cylinder, which acts as source of braking pressure, under normal braking conditions, and to one of the two communicating chambers when an incipient skid is detected. The other of the two communicating chambers is connected to a reservoir and the communication between these two chambers is controlled by a ball valve under the action of a piston which is moved to close the ball valve when the pressure in the third chamber, and thus the braking pressure, exceeds a predetermined threshold value. In this case the braking pressure is discharged slowly through a restrictor throttle when an incipient skid is detected whereas if the braking pressure is below the threshold when an incipient skid occurs, indicating wet or slippery ground, the ball valve is open and the braking pressure is released rapidly through the ball valve to the reservoir.

3,738,714

TREAD FOR MOTOR DRIVEN VEHICLES

William G. Ness, Thief River Falls, Minn., assignor to Arctic Enterprises, Inc., Thief River Falls, Minn.

Continuation-in-part of Ser. No. 63,626, Aug. 13, 1970, abandoned. This application Feb. 19, 1971, Ser. No. 116,949
Int. Cl. B62d 55/12; B62m 27/00
U.S. Cl. 305—24 10 Claims



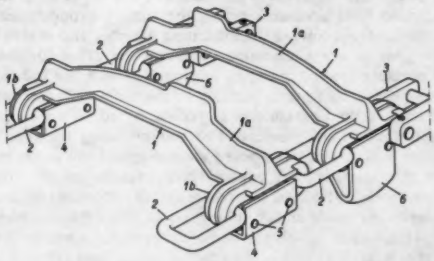
A tread for motor driven vehicles, such as snowmobiles, in the form of an endless belt having rows of spaced sprocket wheel receiving elements integral therewith and with slide pads positioned on the belt on either side of the elements to support the sprocket wheel and guide rails of the suspension system of the tread. The slide pads are made of a low coefficient of friction material to reduce wear and heat problems, with the guide pads having notched surfaces therein for positive guiding of the sprocket teeth and rails of the suspension system, and including clips secured to, or pockets formed in, the endless belt.

3,738,715

CLEAT PLATE STRUCTURES FOR CATERPILLAR BELTS

Erik Herbert Carlsson, Overum, Sweden, assignor to Aktiebolaget Overum Bruk, Overum, Sweden

Filed May 24, 1971, Ser. No. 146,278
Int. Cl. B62d 55/28
U.S. Cl. 305—56 6 Claims



The present invention relates to endless belts or chains for rubber-wheeled vehicles and provides a cleat plate structure

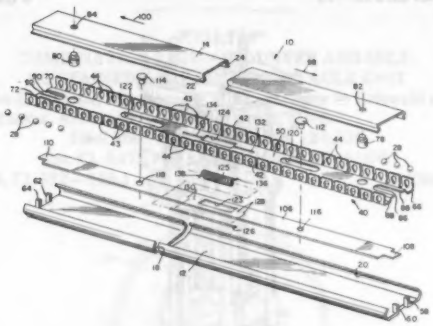
for such belts or chains comprising very few different parts and lacking threaded bolt connections needing supervision and recurrent tightening, such bolt connections being replaced by plain bolts having a friction fit in the parts to be joined thereby.

3,738,716

ANTI-CREEP BALL BEARING RETAINER FOR A DRAWER SLIDE

Ronald D. Lambert, Indianapolis, Ind., assignor to Herbert S. Fall, Indianapolis, Ind.

Filed June 1, 1972, Ser. No. 258,738
Int. Cl. F16c *29/00*
U.S. Cl. 308—3.8 **18 Claims**



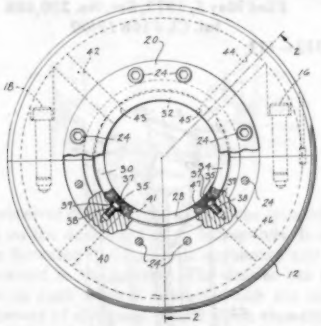
A drawer slide assembly comprising an elongated first track member, an elongated second track member, load bearing anti-friction elements such as ball bearings movably supporting the second member for longitudinal movement on the first member, a longitudinally extending retainer for such bearings, and an energy-storing spring arrangement for urging the retainer in the direction of movement of the second member.

3,738,717

FLEXIBLE PAD JOURNAL BEARING

Willis W. Gardner, Waukesha, Wis., assignor to Waukesha Bearings Corporation, Waukesha, Wis.

Filed Sept. 27, 1971, Ser. No. 184,073
Int. Cl. F16c *17/02*
U.S. Cl. 308—122 **6 Claims**



A pad type journal bearing that provides both flexibility and damping for the control of vibrations of a relatively high speed shaft. The flexible pads are arcuate in shape and are spaced in endwise relationship around the shaft within a circular channel in an annular bearing shell or housing. The radius of curvature of the bore of the pads is slightly larger than the radius of the shaft and the radius of the outer surface of the pads is slightly larger than the radius of the channel in which the pads are seated. The radial thickness of the pads is less than the radial distance between the shaft and the channel bottom. Vibrations of the shaft are transmitted as dynamic loads through the hydrodynamic oil film to the pads. Due to the pad construction and beam-type support, the pads deflect in the central portion when subjected to a load as from the rotor (shaft) weight and/or dynamic loads as from shaft vibration.

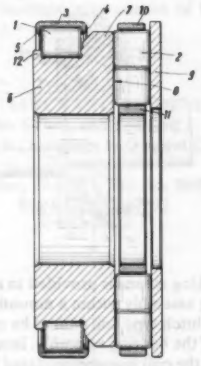
Dynamic deflections (vibrations) of the pads alternately squeeze and expand the oil in the space between the pad outer surface and the housing bore. Thus, this bearing design uniquely provides both support flexibility and squeeze film damping necessary for the control of vibrations of high speed rotors.

3,738,718

COMPACT ROLLER BEARING

Werner Jacob, Frankfurt, and Arpad Toth, Herzogenaurach, both of Germany, assignors to Industriewerk Schaeffler OHG, Herzogenaurach, Germany

Filed Oct. 18, 1971, Ser. No. 189,940
Claims priority, application Germany, Nov. 4, 1970, P 20 54 112.2
Int. Cl. F16c *19/22*
U.S. Cl. 308—174 **6 Claims**



A compact roller bearing assembly for the reception of radial and axial loads comprises a radial roller bearing in combination with an axial roller bearing; the radial roller bearing comprising a series of radial roller bodies between a thin-walled drawn outer ring and a massive inner ring; said massive inner ring having on one side thereof a first flange extending radially outwardly to the radially outer area of the radial roller bearing; said first flange of the massive inner ring having a face acting as a raceway for the axial roller bearing; said axial roller bearing having an outer diameter only slightly smaller than the outer diameter of the thin-walled outer ring of the radial roller bearing.

3,738,719

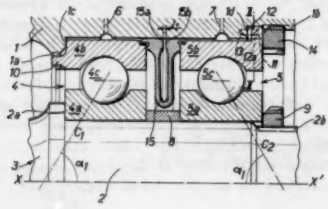
BALL BEARING

Gerhard Langner, Sammarie-les-Lys, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed Oct. 13, 1971, Ser. No. 188,818
Claims priority, application France, Oct. 27, 1970, 7028702
Int. Cl. F16c *33/00*
U.S. Cl. 308—189 A **2 Claims**

A bearing assembly for a rotating part liable to be subjected to an axial load of variable magnitude and direction, the bear-

ing comprising two coaxial bearing sets each consisting of balls, an inner race and an outer race, the latter being mounted to slide axially, the two sliding races being resiliently urged towards respective abutment means, and the sliding motion of one of the such rings, in opposition to the action of the resilient impulsion, being limited by a second abutment means to an extent equal to the internal axial clearance of the other bearing.

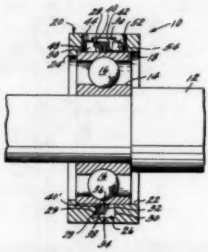


3,738,720

BEARING LOCKING MEANS

Max Joseph Loehle, Lynn, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Aug. 24, 1971, Ser. No. 174,410
Int. Cl. F16c *33/30*
U.S. Cl. 308—236 11 Claims



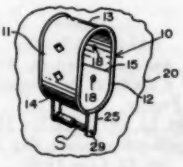
A bearing locking means is provided to accommodate insertion of a bearing assembly within a mounting member in cases where a spring clutch type coil cannot be unwound by rotating the outer ring of the bearing assembly. Insertion of the bearing assembly within the coil is accommodated by diametrically expanding the coil prior to bearing insertion and by flaring the sides of each convolution of the coil so that a portion of the axial force of bearing insertion is directed radially outward to further diametrically expand the coil.

3,738,721

COMBINED TOILET TISSUE STORAGE AND DISPENSING DEVICE

Adrian M. Maschek, 1710 5th St., and Henry Pace, 600 Maria St., both of Kenner, La.

Filed June 23, 1971, Ser. No. 155,833
Int. Cl. B65h *19/00*
U.S. Cl. 312—39 1 Claim



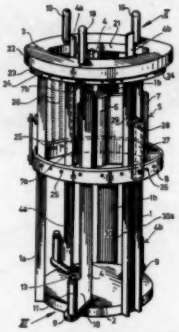
The invention consists of a device mountable on a wall for storing two rolls of toilet tissue and having a third roll of toilet tissue in position for being dispensed. The device consists of a sheet of metal shaped to form a chamber for the storage of two rolls of toilet tissue with a bracket depending from the lower portion of the device for dispensing the third roll.

3,738,722

DEVICE OF THE SELF-LEVELING TYPE FOR STORING AND DISPENSING A STACK OF ARTICLES

Pieter L. Koolman, Dordrecht, Netherlands, assignor to Algemene Scandinavische Import Steel Maatschappij (A. S. T. Staal) N.V., Zwijndrecht, Netherlands

Filed Dec. 1, 1971, Ser. No. 203,558
Claims priority, application Netherlands, Dec. 4, 1970, 7017786
Int. Cl. A47f *1/00*
U.S. Cl. 312—71 6 Claims



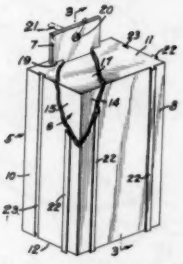
A self-leveling device for storing and dispensing a stack of articles, such as plates, including a carrier for the stack of articles adapted to move up and down in a tubular member, and means for always presenting the uppermost article of the stack at a predetermined level. The carrier is suspended from a top brace by several springs removably secured and distributed along the circumference of the top brace and the carrier. Means are provided to balance the weight of the carrier proper.

3,738,723

CONVERTIBLE CAPSULE CONTAINER

Gerald A. Rudolph, 3521 W. Beverly Boulevard, Montebello, Calif., and James S. Howard, 12740 Woodcliff Circle, Riverside, Calif.

Filed May 5, 1972, Ser. No. 250,668
Int. Cl. F16b *12/00*
U.S. Cl. 312—111 8 Claims



A container for capsules that is formed of an outer transparent parallelepiped-shaped enclosure open at one end and closed at the other, the closed end comprising a wall having a

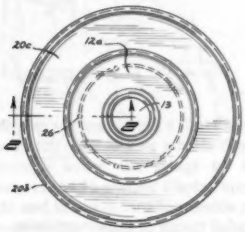
slot therein, and of an article-holding tray or drawer slidingly fitted in said enclosure, one end wall of the tray being provided with a tab. Said container being convertible to have two operative positions — one position with the tray disposed in the enclosure and the tab thereof extending through said slot in the closed end of the enclosure, the tab being adapted to be engaged with a hanger and the container thereby suspended for display of its contents - and the other position with the tray reversed end-for-end in the enclosure with the tab extending from the open end of the enclosure and serving as a drawer handle for the tray. Such containers by reason of their parallelepiped form, being adapted to be arranged in side-by-side stacks in file-case arrangement so the trays may be selectively withdrawn from the enclosures partly or entirely, as desired. Interlocking tongues and grooves retain the containers in stacked relation, and the stacks in desired position.

3,738,724

COMBINATION EATING COUNTER AND SELF-CONTAINED GARBAGE RECEPTACLE UNIT

John G. Rauma, Minneapolis, Minn., assignor to Griswold and Rauma, Architects, Inc., Minneapolis, Minn.

Filed Mar. 15, 1971, Ser. No. 124,335
Int. Cl. A47b *96/18*; A47f *9/00*; A47b *81/00*
U.S. Cl. 312—140.1 **8 Claims**



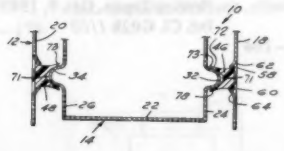
This is a combination eating counter and garbage receptacle unit in which at least a portion of the counter top is removable to provide access to the garbage receptacle area thereunder.

3,738,725

ASH RECEIVER

John G. Visser, Grand Rapids, Mich., assignor to F. L. Jacobs Co., Detroit, Mich.

Filed Aug. 19, 1970, Ser. No. 65,013
Int. Cl. F16c *29/00*; A47b *88/00*; B60n *3/08*
U.S. Cl. 312—246 **2 Claims**



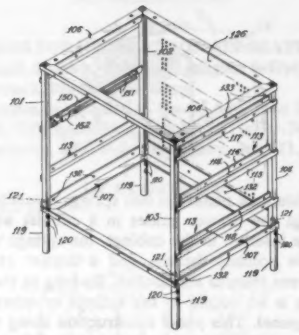
The ash receiver of the invention is of the type adapted for installation on the dashboard of an automobile. It includes a housing for fastening to the vehicle dashboard and a drawer slidably received in the housing. The drawer has elongated projections on each sidewall thereof which are received in concave grooves of elongated plastic guide elements secured to the sidewalls of the housing. The guide elements are fabricated from a resilient plastic material such as nylon or ABS resin. The guide elements include lip portions which exert spring-like pressure on the projections. The interior wall surfaces of the concave recesses converge to form an ever-narrowing recess to thereby permit reception of projections which may vary in dimension.

3,738,726

METAL-WOOD FURNITURE

Francis J. Burst, and Donald W. Turner, both of Batesville, Ind., assignors to Hill-Rom Company, Inc., Batesville, Ind.

Filed June 30, 1971, Ser. No. 158,460
Int. Cl. A47b *47/02*
U.S. Cl. 312—257 SK **8 Claims**



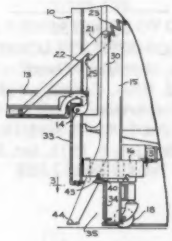
A metallic framework to which wooden panels are attached, to form furniture for general use and use in a patient's room in a hospital, which furniture may consist of bedside cabinets, dressers and the like.

3,738,727

APPLIANCE ANTI-TIP DEVICE

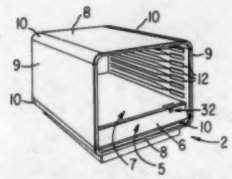
Martin L. Race, Elm Grove, and Leonard J. Martiniak, Waukesha, both of Wis., assignors to General Electric Company, Louisville, Ky.

Filed Dec. 17, 1971, Ser. No. 209,202
Int. Cl. A47b *81/02*
U.S. Cl. 312—276 **8 Claims**



A free-standing appliance cabinet of the type having a door hinged to swing outwardly to provide access to the inside of the cabinet has an anti-tip arm supported within the cabinet for movement of the cabinet to a tip-preventing position. The anti-tip arm is interconnected with the door so that it is moved outwardly to its tip-preventing position when the door is opened and is refracted when the door is closed. The anti-tip arm is adapted to provide support to the cabinet whereby tipping of the cabinet, in a forwardly direction in response to force downwardly on the open door surface, is prevented. The anti-tip arm has means therewith operable to lock the arm to the cabinet in the event that a tipping force is exerted on some part of the the other than the open door, such as downwardly against an outwardly extended upper rack, to further prevent tilting or upsetting of the cabinet.

3,738,728
REMOVABLE LOCK PANEL FOR CABINET AND FURNITURE
Robert Lewis Eckard, Hickory, N.C., assignor to Champion International Corporation, Hamilton, Ohio
Filed Nov. 22, 1971, Ser. No. 200,915
Int. Cl. A47b 88/16
U.S. Cl. 312—330 10 Claims

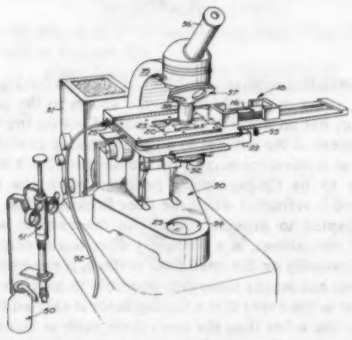


A removable lock panel has two springs extending out of it which engage the drawer guides in a cabinet whereby the panel can be inserted in the cabinet, the springs will engage drawer guide notches therein, and a drawer can then be placed adjacent thereto and locked. So long as the drawer is locked there is no access to the springs or other means to remove the panel. This panel construction along with its associated cabinet and drawer parts permits adding a lockable drawer or tray to an existing cabinet with a minimum amount of cabinet alterations and actually without the necessity of using fasteners (nails, screws, adhesives).

3,738,729
PRODUCTION OF TUNGSTEN HALOGEN LAMPS
George Eric Coxon, and John Michael Rees, both of London, England, assignors to Thorn Electrical Industries Limited, London, England
Filed Aug. 10, 1971, Ser. No. 170,627
Claims priority, application Great Britain, Aug. 11, 1970, 38,719/70
Int. Cl. H01j 9/38
U.S. Cl. 316—3 4 Claims

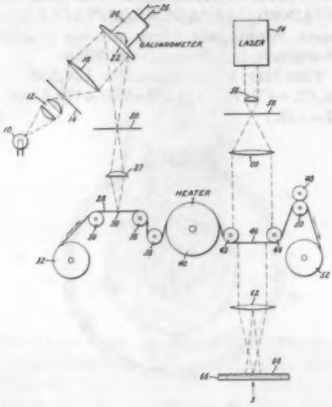
A method of making a tungsten halogen incandescent lamp in which iodine is introduced into the lamp envelope in the form of an iodide or hydroiodide of an element of Group IV of the Periodic Table which is an involatile solid at room temperature.

3,738,730
MICROSCOPE ATTACHMENT
Gerald F. Binnings, Arcadia; Theodore N. Meyer, Westminster, and Mel J. Riley, Covina, all of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.
Continuation of Ser. No. 858,992, Sept. 18, 1969, abandoned. This application July 6, 1971, Ser. No. 160,050
Int. Cl. G02b 21/26
U.S. Cl. 350—90 4 Claims



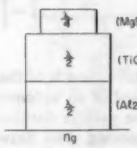
Disclosed herein is an assembly for cooperating with the viewing stage of microscope, which assembly provides a supply bin for a plurality of laboratory slides and sequential positioning thereof in approximate focus between the objective and substage lenses of the microscope. Included are spring biasing means arranged to hold the specimen-carrying surface of a slide in the reference focal plane and an integral feed for injecting optical fluid between the substage lens and the specimen.

3,738,731
VARYING AREA OPTICAL PROCESSING FOURIER ANALYZER
Subhash Chandra, Pennsburg, and Raymond H. Lambert, Eaglesville, both of Pa., assignors to General Electric Company, New York, N.Y.
Filed Aug. 25, 1971, Ser. No. 174,783
Int. Cl. G11b 7/00; G06k 11/00
U.S. Cl. 350—162 SF 1 Claim



Signal to be analyzed for frequency content is recorded as variable-width track on film. This image is transformed by conventional coherent optics, and real frequency components appear along the real axis, extraneous components caused by variable-width record being off this axis and so readily excluded from consideration.

3,738,732
MULTI-LAYER ANTIREFLECTION COATING
Hideo Ikeda, Kamakura, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed Oct. 6, 1970, Ser. No. 78,389
Claims priority, application Japan, Oct. 9, 1969, 44/80371
Int. Cl. G02b 1/10
U.S. Cl. 350—164 7 Claims



A quasi-symmetrical three-layer coating of a desired equivalent refractive index N having a wide dispersion effect in the regions adjacent to the visible region is presented. The coating consists of various substances deposited in vacuum in a stable manner. One layer of a quasi-symmetrical three-layer coating is substituted by a glass to be coated. When the glass to be coated has not the refractive index of 1.52 or 1.74, a suitable layer λ/4 in thickness is coated over said glass.

3,738,733

OPTICAL DISPLAY SYSTEMS

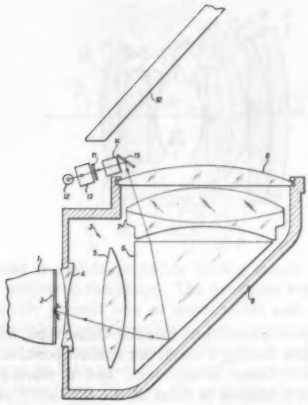
Alexander Pettit, Rhyl, North Wales, assignor to Pilkington P.E. Limited, St. Helens, Lancashire, England

Filed Oct. 6, 1971, Ser. No. 186,907

Claims priority, application Great Britain, Oct. 9, 1970, 48,195/70

Int. Cl. G02b 27/10

U.S. Cl. 350—174 9 Claims



A head-up display system having a first display apparatus including a cathode ray tube to give a main display and an optical system through which the image on the tube travels towards an observer, and a second display apparatus including a source of light and image means to provide an additional display, and light-directing means to direct light from the source into the optical system so as to travel toward the cathode ray tube so that an image of the additional display is formed on the tube, whereby a stand-by display is provided which can be switched on in the event of failure of the main display. The light-directing means is positionally adjustable, whereby the position of the image of the additional display formed on the cathode ray tube is also adjustable.

3,738,734

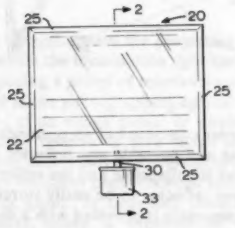
OPTICAL FLUID LENS CONSTRUCTION

Stuart S. Tait, 3 Marydons Crescent, Agincourt, Ontario, and Thomas T. Reider, 47 Brahms Avenue, Willowdale, Ontario, both of Canada

Filed Feb. 23, 1972, Ser. No. 228,634

Int. Cl. G02b 3/12

U.S. Cl. 350—179 11 Claims



This invention provides a liquid-filled lens, which incorporates means for causing atmospheric pressure at least partly to counteract the internal pressure arising from the static pressure of the liquid head. This is accomplished generally by lowering the atmospheric equivalent level below the top of the chamber. Preferably, the latter is specifically carried out by making the chamber within the liquid lens air-tight except for an opening connected to an open-ended tube, the other end of the tube being immersed below the level of a liquid in a receptacle, the level of the liquid in the receptacle being below the top of the chamber, and preferably in the area between the bottom of the chamber and a point about one-third of the way between the bottom and the top of the chamber.

3,738,735

LENS FOR NIGHT VISION APPARATUS

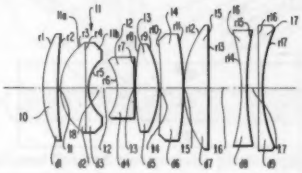
Franz Schlegel, Munich, Germany, assignor to Optische Werke G. Rodenstock, Munich, Germany

Continuation-in-part of Ser. No. 45,640, June 12, 1970, abandoned. This application July 21, 1971, Ser. No. 164,753

Claims priority, application Germany, July 21, 1971, P 20 36 298.5

Int. Cl. G02b 9/00

U.S. Cl. 350—214 2 Claims



An objective for night vision apparatus with a positive curvature of field whose radius corresponds approximately to the focal distance and which has a ratio of lens aperture of up to about 1:1.1, preferably 1:1.3, and a field angle of about 50° for visible rays, which comprises a converging meniscus-shaped collective lens as the front lens, a first cemented diverging meniscus following the front lens which in turn is adjoined by a second diverging meniscus that is uncemented and consists of a single lens; the diaphragm space is enclosed between two meniscus lenses, while the second meniscus lens is adjoined by three collecting lenses which, in turn, are followed by two Smyth lenses.

3,738,736

PHOTOGRAPHIC LENS SYSTEM OF GREAT RELATIVE APERTURE

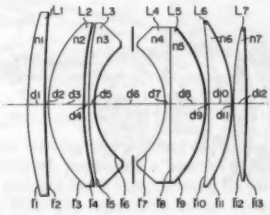
Yoshiyuki Shimizu, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 20, 1971, Ser. No. 209,540

Claims priority, application Japan, Dec. 25, 1970, 45/125635

Int. Cl. G02b 9/62

U.S. Cl. 350—215 5 Claims



A photographic lens system comprises seven components, which, as viewed in the direction of incidence of light, are a positive component convex to the object side of the lens, a positive component convex to the object side, a negative meniscus component convex to the object side, a negative

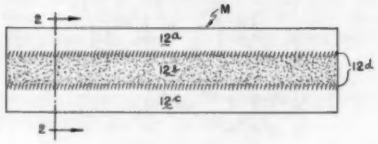
component having its surface of greater curvature facing the object side, a positive component having its surface of greater curvature facing the image side, a positive meniscus component convex to the image side, and a positive component having its surface of greater curvature facing the object side. An aperture stop is interposed between the third and fourth components. The fourth and fifth components are joined together. The entire system satisfies predetermined conditions, thereby providing a relative aperture of F/1.2, an angle of view 46° and a back focus at least 0.7 times as long as the overall focal length of the system, while various aberrations therein are well corrected.

3,738,737

ANTIGLARE SAFETY REARVIEW MIRROR FOR AUTOMOTIVE VEHICLES

John Edward Mills, 15142 Drake Road, Strongsville, Ohio

Filed Oct. 7, 1971, Ser. No. 187,563
Int. Cl. B60r *1/04*; G02b *5/08*
U.S. Cl. 350—278 11 Claims



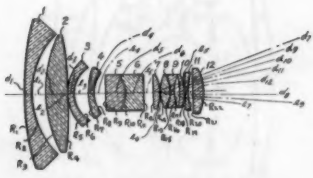
In a day and night rearview mirror system for an automotive vehicle, whether an otherwise conventional inside or outside mirror or a periscope system, on a mirror over its horizontal extent and horizontally parallel to road as viewed in the image display, there is provided a middle band of reflectivity reduced to a degree that, for following headlights imaged to the driver in the band, the glare is diminished to a level which is not interfering to a safe driving night vision nor annoying to the driver; a sufficient width or vertical dimension of the band enabling the driver easily to bring imaged following headlights into, and with changing inter-vehicle spacing keep them within, the reduced reflectivity area by a slight head tilting.

3,738,738

SUPER-WIDE ANGLE PHOTOGRAPHIC OBJECTIVE

Yasuo Takahashi, Tokyo, Japan, assignor to Ashai Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Sept. 2, 1971, Ser. No. 177,343
Claims priority, application Japan, Sept. 9, 1970, 45/79064
Int. Cl. G02b *9/64*
U.S. Cl. 350—214 3 Claims



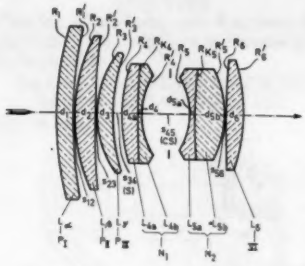
A ten group, twelve element, super-wide angle photographic objective lens which corrects chromatic aberration over the whole image plane to be used and to obtain an aberration condition balanced therewith.

3,738,739

HIGH LIGHT INTENSITY PHOTOGRAPHIC LENS OF THE EXTENDED GAUSS TYPE

Erhard Glatzel, and Erwin Konschack, both of Heidenheim, Germany, assignors to Carl-Zeiss-Stiftung, Wurttemberg, Germany

Filed Mar. 17, 1972, Ser. No. 235,578
Int. Cl. G02b *9/62*, *9/64*
U.S. Cl. 350—214 10 Claims



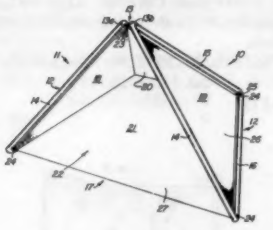
A photographic lens of the extended Gauss type, with a high relative aperture, having a single air spaced positive element behind the rear Gauss component, and a plurality of air spaced positive elements in front of the forward Gauss component. Eight specific embodiments are disclosed, and constructional rules or formulae are developed, to enable the production of other specific structures embodying the invention.

3,738,740

SUN REFLECTOR

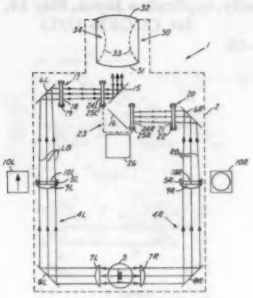
Graham S. Campbell, 6003 Oakhill Drive, Salt Lake City, Utah

Filed July 3, 1972, Ser. No. 268,821
Int. Cl. G02b *5/08*
U.S. Cl. 350—288 10 Claims



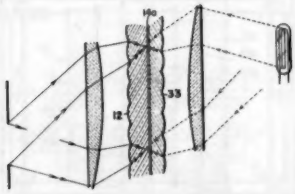
A sun reflector composed of an upstanding frame that supports a flexible and portable sun reflector or solarium structure. The frame is collapsible and the reflector structure folds to allow the sun reflector to be easily stored and transported. The reflector structure is provided with a dark, heat absorbing and retaining outer surface, and a light sun reflective inner surface and floor. When in use, the sun reflector is positioned to expose the reflector interior and floor to direct sunlight entering through an open frontal area such that a sun bather positioned on the reflector floor is exposed to both direct and reflected sunlight.

3,738,741
SLIDE PROJECTOR
Thomas A. Fournie, 6805 Zumirez Drive, Malibu, Calif.
Filed June 30, 1970, Ser. No. 51,155
Int. Cl. G03b 21/14
U.S. Cl. 353—20 12 Claims



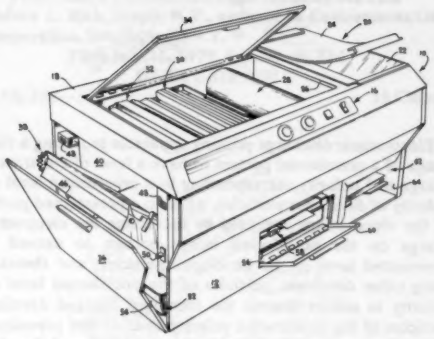
Disclosed is a slide projector having means for polarizing the light projected therefrom. The projector may be arranged to selectively project one or more slides and the polarizing means are selectively operable to control the intensity of the slide image or images projected, thereby to permit the image of a slide to be selectively developed on a viewing screen and dissolved therefrom. Further, the polarizing means may be arranged so that a dissolve type transition may be accomplished on a viewing screen from the projection of the image of one slide to the projection of the image of another.

3,738,742
ILLUMINATION OPTICAL SYSTEM FOR PROJECTING MULTI-PHOTOGRAPHIC IMAGE
Yoshio Fukushima, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed May 7, 1971, Ser. No. 141,435
Claims priority, application Japan, Oct. 20, 1967, 42/67455
Int. Cl. G03b 21/14
U.S. Cl. 353—38 5 Claims



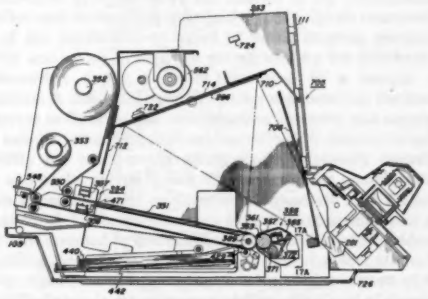
An illumination optical system for projecting multi-photographic images wherein the illumination light loss is minimized is provided by disposing a group of micro-lenses substantially similar to that used in the photographing optical system in the of and backwardly of an image plane; or displacing an illumination light source relative to said image plane in plane symmetrical relation with a movable photographing aperture; or disposing a light diffusion plate between said image plane and said micro-lens group; or disposing photographing and projection condenser lenses in symmetrical relation with respect to said image plane; or disposing the light source and the aperture in point symmetrical relation with respect to the center of said image plane; or positioning the light source relatively closer to said image plane; or focusing the optical image of the light source forwardly of the image plane after the light beams have passed through the image plane.

3,738,743
FLAT BED ELECTROSTATIC PHOTOCOPIER DESIGN FOR CUSTOMER SERVICEABILITY
Lionel B. Hoffman, Wyckoff, and Isaac W. Sanders, Belleville, both of N.J., assignors to Pitney-Bowes Inc., Stamford, Conn.
Filed Apr. 5, 1971, Ser. No. 131,064
Int. Cl. G03g 15/22
U.S. Cl. 355—3 10 Claims



The disclosed flat bed electrostatic photocopier utilizes a U-shaped feedpath for feeding successive copy sheets from a supply through various processing stations to a receiving compartment. All segments of the feedpath are adjacent the perimeter of the copier and accessible through openings in the copier housing. Flash illumination of the original is utilized to achieve a full reflected image for projection onto the copy sheet while in transit through the imaging station.

3,738,744
VIEWER PRINTER APPARATUS
James R. Cassano, Rochester, and Charles E. Smith, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Sept. 18, 1970, Ser. No. 73,568
Int. Cl. G03g 15/10
U.S. Cl. 355—10 13 Claims



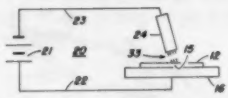
Combination viewing and printing apparatus characterized by the capability of: producing a positive print from either a negative or a positive input film; printing on plain sheet paper which is fed from the apparatus at an optimum location; selecting the information to be printed from a microfilm transported by means of a differential drive arrangement which optimizes the film movement; accommodating various types of recording media, for example roll microfilm and microfiche; and presenting a plurality of image formats to the viewing screen and a recording media in a predetermined orientation convenient for viewing and printing.

3,738,745

FUR BRUSH ERASER

Herbert L. Bresnick, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 30, 1971, Ser. No. 213,917
Int. Cl. G03g 13/22
U.S. Cl. 355—17 9 Claims



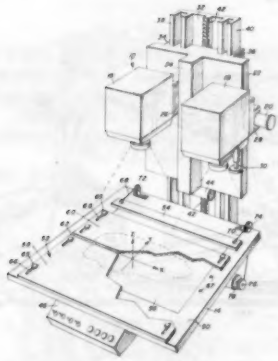
Electrostatic discharge printing apparatus providing a visual image of a preselected pattern to have a level of electrostatic charge and polarity corresponding to a preselected level and polarity of developer particles, wherein a preassigned portion of the visual image is erased by increasing the electrostatic charge on the preselected image portion to exceed the preselected level of the developer particles, and thereafter using other developer particles of the preselected level and polarity to attract thereto the increased charged developer particles of the preselected polarity to erase the preassigned image portion without disturbing the remainder of the visual image having the preselected charge level and polarity.

3,738,746

AUTOMATIC STEREOSCOPIC PROFILING SYSTEM

James G. Lewis, Falls Church, and Thomas A. Hughes, McLean, both of Va., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Dec. 8, 1970, Ser. No. 96,035
Int. Cl. G03b 35/24
U.S. Cl. 355—22 8 Claims



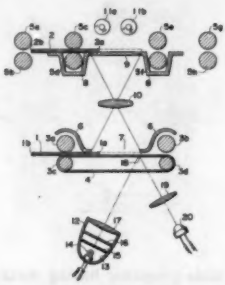
Positive and negative transparencies of a stereo-pair of photographs of terrain are projected in a double-projection stereoplotter apparatus to produce an image containing a uniform density line having extended continuity and distinguishable from the overall showing which appears so as to provide a profile signature of a plane intersecting the terrain. Edge enhancement of the photographs aids in establishing a more definitive profile signature.

3,738,747

CONTINUOUS FEED COPYING MACHINE WITH AN ELECTRONIC FLASH ILLUMINATION SYSTEM

Masamichi Hayashi, Minamishidaro-gun, Aichi-ken, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka-shi, Japan

Filed May 14, 1971, Ser. No. 143,518
Claims priority, application Japan, May 14, 1970, 45/47480
Int. Cl. G03b 27/72
U.S. Cl. 355—68 3 Claims



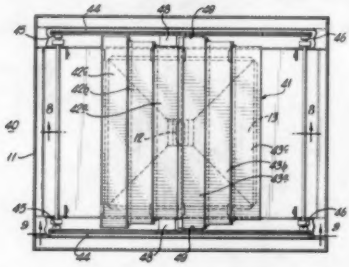
A copy machine having an electronic flash illumination system is disclosed. The electronic flash is activated when a photosensitive device detects a light sensitive sheet of copy paper in the proper exposure position. The exposure takes place as both the original and copy sheets are moving in synchronism. The photosensitive device and an illumination device for detecting the copy paper are normally constructed to operate in a region of the spectrum to which the copy paper is insensitive.

3,738,748

PHOTOGRAPHIC PRINTER

Richard A. Weihsmantel, 800 Surrey Dr., Streamwood, Ill., and Harold R. Benson, 525 W. Maple St., Lombard, Ill.

Continuation-in-part of Ser. No. 880,716, Nov. 28, 1969, abandoned. This application June 9, 1971, Ser. No. 151,253
Int. Cl. G03b 27/04
U.S. Cl. 355—121 4 Claims



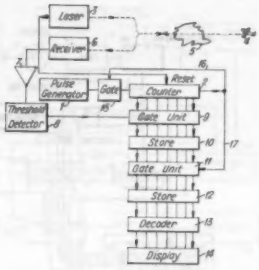
There is provided a contact printer comprising a cabinet having a high intensity light source mounted within the cabinet, with a reflector fixedly mounted in the cabinet for directing a uniform beam of light toward the top of the cabinet where a printing frame is pivotally mounted about a central axis thereof. Because of the mounting of the frame, the top side of the frame may be loaded and then the loaded side may be pivoted downwardly toward the light source. It is desirable to use a high intensity light source in a suitable spectrum range to provide rapid exposure of the sensitized materials. One such light source advantageously is maintained in a reduced standby condition when the materials are not actually being exposed. When the lamp is in such standby condition, a shade or curtain is closed over the lamp to prevent blinding of an operator during pivoting of the printing frame.

3,738,749

RANGEFINDERS

Frank G. Everest, 287 Lonsdale Road, Stevenage, England

Filed Oct. 12, 1971, Ser. No. 188,325
Claims priority, application Great Britain, Oct. 15, 1970, 49,091/70
Int. Cl. G01c 3/08
U.S. Cl. 356—5 5 Claims



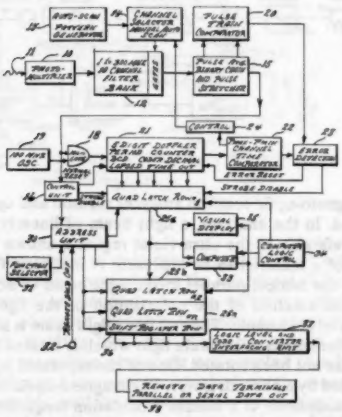
In a rangefinder (for example a laser rangefinder) emitting a pulse of electromagnetic energy, a pulse generator steps a counter to generate a progressively increasing signal following the emission of a pulse for a period corresponding to the delay before reception of a reflected pulse at the maximum range of interest. When a reflected signal is received the count at that instant is stored but subsequent reflections during the same period cause the stored value to be erased and replaced by the subsequent count. At the end of the said period the last stored value is transferred to a display unit. In this way, echoes from partially reflecting media between the emitter and a target are ignored.

3,738,750

DOPPLER SHIFT LASER VELOCIMETER DATA PROCESSOR

Henry T. Kalb, Manchester; Frank L. Crosswy, Tullahoma, and Edward B. Harding, McMinnville, all of Tenn., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 10, 1970, Ser. No. 96,817
Int. Cl. G01p 3/36
U.S. Cl. 356—28 1 Claim



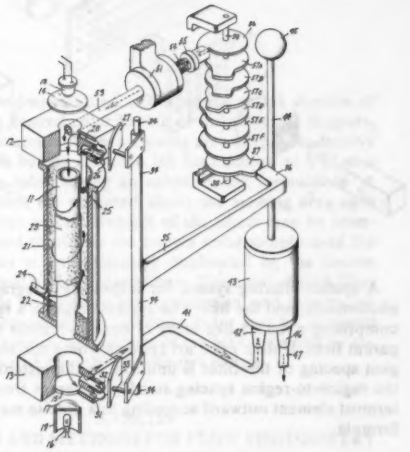
An apparatus for extracting doppler shift frequency information from signals which are produced by dual scatter laser velocimeter over the doppler frequency range of 1 to 300 MHz. The laser doppler velocimeter data which is translated and processed into a form compatible with digital computer inputs may be obtained for very short scan times.

3,738,751

PORTABLE CONDENSATION NUCLEI METER

Theodore A. Rich, Scotia, N.Y., assignor to Environment/One Corporation, Schenectady, N.Y.

Filed July 21, 1970, Ser. No. 56,834
Int. Cl. G01n 1/00
U.S. Cl. 356—37 11 Claims



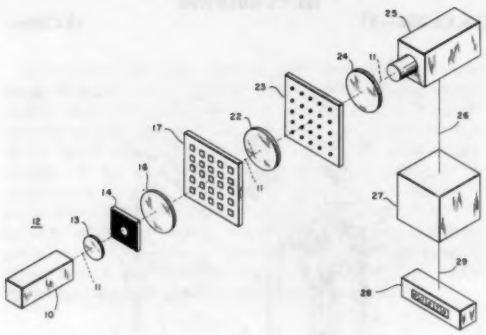
A portable condensation nuclei meter mounted in a manually portable housing and including a condensation chamber supported within the housing. A light source and electro-optic detector views the interior of the condensation chamber and derives output pulsed electric signals representative of the production of cloud of liquid droplets produced therein and which in turn are determined by the numbers of condensation nuclei particles entrained in a sample atmosphere. A manually operated pump supported on the housing serves to flush out the condensation chamber and supply it with sample atmospheres at substantially 100 percent relative humidity for each measurement cycle. Manually operable inlet and outlet valves isolate the condensation chamber during an expansion cycle performed intermediate each flushing operation of the pump. Manually actuated expansion cycle apparatus is coupled to the condensation chamber for suddenly expanding the volume of the condensation chamber at a sufficiently rapid rate to supersaturate a trapped specimen of the humidified sample atmosphere and form the cloud of droplets about the condensation nuclei particles as centers of condensation. The number of droplets thus produced being proportional to the number of condensation nuclei particles entrained in the sample atmosphere being monitored. A measure and hold measuring circuit having a linearly calibrated indicating meter is coupled to the electro-optic detector for measuring the value of the output electric signal pulses produced by the electro-optic detector during the instant of each liquid droplet cloud formation with the electric signal pulses being stored in a capacitor for subsequent reading out at a more convenient time with the linearly calibrated indicating meter by a user of the instrument.

3,738,752

INTENSITY SPATIAL FILTER HAVING NON-UNIFORMLY SPACED FILTER ELEMENTS

Robert Alfred Heinz, Flemington Township, Hunterdon County; Robert Charles Oehrle, Edgewater Park Township, Burlington County; Laurence Shrapnell Watkins, Hopewell Township, Mercer County, all of N.J., and Terrence Edward Zavecz, Macungie Township, Lehigh County, Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed May 3, 1972, Ser. No. 249,983
Int. Cl. G01n 21/32; G02b 27/38
U.S. Cl. 356—71 4 Claims



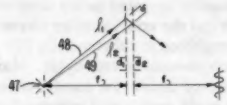
A spatial filtering system for inspecting integrated circuit photomasks, and the like. The system employs a spatial filter comprising a matrix-like array of opaque regions on a transparent field. Unlike prior art systems where the region-to-region spacing of the filter is uniform, in the instant invention the region-to-region spacing steadily increases from the centermost element outward according to a precise mathematical formula.

3,738,753

INTERFEROMETER UTILIZING GRATINGS TO MEASURE MOTION

Wright H. Huntley, Jr., Los Altos, Calif., assignor to Holograf Corporation, Los Altos, Calif.

Filed Sept. 21, 1970, Ser. No. 73,791
Int. Cl. G01b 9/02, 11/04
U.S. Cl. 356—111 7 Claims



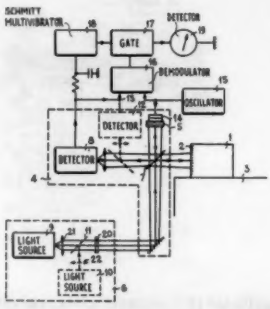
An interferometer and method of making same are disclosed wherein two energetic beams are used to record an interference pattern to form a grating having a period of a substantially exact multiple or standard submultiple of a standard measuring unit and wherein this interference pattern is utilized in an interferometer fringe counter wherein relative movement of the grating and source produce a fringe count which is a measure of the relative movement. The grating is disclosed as a hologram, and in one embodiment light is transmitted through the hologram in one direction and then back through the hologram in another direction whereby the interference fringes are established on the same side of the hologram as the source. In another embodiment two holograms are utilized, one fixed and one movable relative to the source, and interference fringes are established on the side of the hologram opposite the side where the source is located.

3,738,754

OPTICAL CONTACTING SYSTEMS FOR POSITIONING AND METROLOGY SYSTEMS

Raymond Marcy, and Michel Lacombat, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 18, 1971, Ser. No. 125,640
Claims priority, application France, Mar. 20, 1970, 701063
Int. Cl. G01b 9/02
U.S. Cl. 356—106 12 Claims



The invention relates to optical connecting systems for accurately positioning a surface with respect to another surface.

The contacting system according to the invention comprises a Michelson interferometer in one arm of which an optical length modulating device is introduced. The source of radiant energy has an emission spectrum including two distinct spectral portions which are seperately sensed in the detection arm of the interferometer. The detected signals are superimposed at the input of a synchronous detector, the output of which is coupled to a zero indicator.

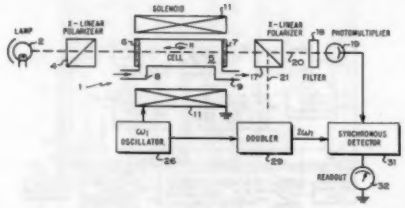
The contacting devices in accordance with the invention are used in laser metrology systems.

3,738,755

ANALYZER EMPLOYING MAGNETO-OPTIC ROTATION

Robert L. Chaney, Cupertino, and Michael A. Kelly, Mountain View, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed July 14, 1971, Ser. No. 162,602
Int. Cl. G01n 21/40
U.S. Cl. 356—117 9 Claims



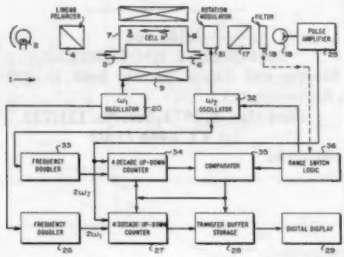
A magneto-optic rotation analyzer method and apparatus is disclosed. In the analyzer, a light beam of linearly polarized light, preferably in the ultra-violet region is shown through a sample of a material to be analyzed. A magnetic field is applied to the sample parallel to the light beam to obtain magneto-optic rotation of the polarization of the light by constituents of the sample. The emerging light beam is analyzed as to its polarization to separate light which is rotated from light which has not been rotated. One of the separated light beams is detected by a photodetector. The magneto-optic rotation effect is modulated at a certain modulation frequency and the output signal is synchronously detected against the modulation frequency or a harmonic thereof for improved signal-to-noise ratio. The synchronously detected output is measured to obtain a measurement of the sample under analysis.

3,738,756

MAGNETO-OPTIC ROTATION ANALYZER

Robert L. Chaney, Cupertino, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed July 12, 1971, Ser. No. 161,846
Int. Cl. G03b 27/22
U.S. Cl. 356—117 8 Claims



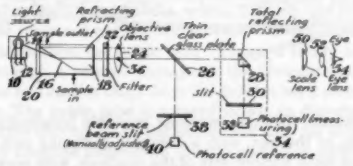
In a magneto-optic rotation analyzer, a first modulator modulates the magneto-optic rotation, if any, of the probing light beam by the sample at a first modulation frequency and a second reference modulator, independent of the sample, modulates the polarization of the probing light beam at a second reference modulation frequency. Both modulators produce separate modulation components in the output of the photo-multiplier employed to detect the polarization affected probing light beam. The separate sample and reference modulation signal components are separately detected and integrated. The reference signal is utilized to compensate for variations in the parameters of the optical components through the optical path of the analyzer.

3,738,757

REFRACTOMETER

Ormond E. Barstow, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed July 2, 1971, Ser. No. 159,429
Int. Cl. G01n 21/46
U.S. Cl. 356—131 10 Claims



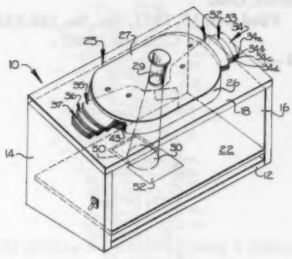
This invention relates to an improved recording refractometer of the critical angle type wherein the brightness of the dark field is observed continuously by one reference photocell while another photocell assembly (measuring) scans to find the light-dark dividing line. The electrical outputs of the reference and measuring photocells are coupled to a bridge circuit, amplifier and servo motor which pivots the measuring photocell assembly until the slit adjacent to the measuring cell comes into, and remains in, coincidence with the light-dark boundary. Indicating or recording means coupled mechanically to the measuring photocell assembly shows the refractive index of the sample.

3,738,758

METHOD AND APPARATUS FOR FORMULATING INKS

William C. Gober, Jr., Doraville, Ga., assignor to Wikoff Color Corporation, Charlotte, N.C.

Filed Sept. 29, 1970, Ser. No. 76,457
Int. Cl. G01j 3/48, 3/52
U.S. Cl. 356—189 10 Claims



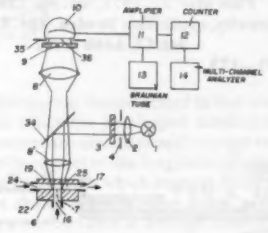
A method and apparatus for formulating an ink capable of reproducing a desired color having an unknown ink formulation. The apparatus includes a viewing area adapted to receive a color sample having a known ink formulation as well as a sample of the color having an unknown ink formulation. A number of filters are mounted above the viewing area such that any number or combination of the filters may be selectively positioned to overlie the known color sample until the unknown color is approximately duplicated by the known color sample and superimposed filters. The color of each filter is reproducible by a known ink formulation, and thus an ink capable of reproducing the unknown color may be prepared by mixing an appropriate amount of the inks indicated by the selected filters with the ink of the known sample.

3,738,759

APPARATUS AND METHODS FOR FLOW PHOTOMETRY OF PARTICLES OF A DISPERSION

Wolfgang Dittrich, Am Krug 42, and Wolfgang Gohde, Lohafenerweg 39, both of Muenster, Germany

Continuation-in-part of Ser. No. 884,651, Dec. 12, 1969, abandoned. This application Apr. 16, 1970, Ser. No. 29,215
Claims priority, application Germany, Apr. 18, 1969, P 19 19 628.2
Int. Cl. G01n 21/26
U.S. Cl. 356—208 6 Claims



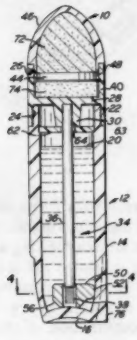
In flow photometry by means of transmitting light from a light source to a flowing dispersion in a measuring zone and from the dispersion to a photosensitive receiver and associated apparatus for measuring and/or counting the particles of the dispersion and in which there is an optical axis extending from the measuring zone to the photosensitive receiver, the improvements in which the dispersion is caused to flow through the measuring zone with a velocity component parallel to the optical axis, and a stream of the dispersion

medium optically empty or other optically empty fluid of like refractive index is directed to wash the dispersion from the measuring zone or to form an envelope around the dispersion as the dispersion is introduced into the measuring zone.

3,738,760
PAINT TOUCH-UP CONTAINER

John W. Madeira, Akron, Ohio, assignor to Plastic-Kote Company, Medina, Ohio

Filed Oct. 13, 1971, Ser. No. 188,824
Int. Cl. A46b *11/00*
U.S. Cl. 401—4 **10 Claims**

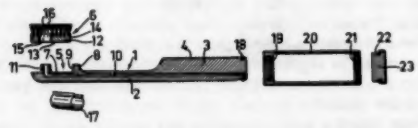


A container adapted to dispense materials from first and second storage chambers. The first storage chamber is defined by a hollow cylindrical body having a sidewall and a bottom wall. A cap is provided for the body and includes an applicator brush. A hollow agitator is disposed within the first chamber about the brush. Ribs or fins project from either the agitator or the cylindrical body sidewall to guide the agitator in its reciprocating up and down movement. The cap further includes a second storage chamber defined by an upper sidewall extending from the cap. A closure member is provided for the cap. In the preferred embodiment the first storage chamber of the container is adapted to receive touch-up paint. The second storage chamber is adapted to receive rubbing compound.

3,738,761
RESERVOIR BRUSH FOR THE APPLICATION OF AGENTS ON TO SURFACES

Goran J. F. Hard af Segerstad, 4 Borgmastaruagen, 190 30 Sigtuna, Sweden

Filed Mar. 31, 1971, Ser. No. 129,934
Claims priority, application Sweden, Apr. 6, 1970, 4695
Int. Cl. A46b *11/02*
U.S. Cl. 401—173 **3 Claims**

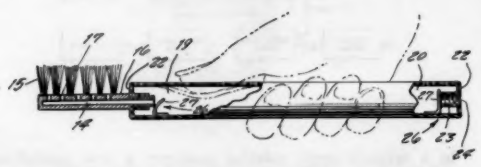


A reservoir brush comprising a brush body including a shank with a through hole or duct, and an enlarged end portion having external threads engaging internal threads of a cylindrical receptacle for a more or less viscous treating agent such as a tooth paste. At its other end the shank is provided with a flat support surface having a first stud extending at right angles thereto, said stud having a hole communicating with the duct of the shank, and a second stud extending from one end of the support surface at right angles thereto and having a flat surface facing the hollow stud. The flat support surface of the shank is adapted to receive a correspondingly shaped detachable brush element having a through hole matching the hollow stud extending from the flat support surface, and an end surface adapted to engage the flat surface of the second stud. A resilient means is provided to keep the brush element in a firm engagement with the support surface.

3,738,762
DISPOSABLE TOOTHBRUSH

Jimmie Moore, and Elmor Moore, both of 490½ Seward Street, Rochester, N.Y.

Filed Mar. 8, 1971, Ser. No. 121,732
Int. Cl. A46b *11/02*
U.S. Cl. 401—186 **5 Claims**

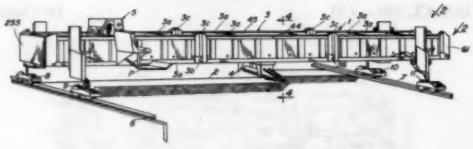


A novel toothbrush that includes an elongated handle made of resilient plastic material, the handle being hollow so to form a compartment within each opposite end thereof, one compartment containing toothpaste and the other compartment containing mouthwash, and the opposite ends of the toothbrush handle being attachable to a removable brush head that includes a hollow base upon which brush bristles are supported, the hollow base being adaptable to receive the toothpaste or mouthwash from the elongated handle, and the base being perforated so to permit the toothpaste or mouthwash to flow outward upon the brush bristles.

3,738,763
CONCRETE FINISHING MACHINES

Herbert C. Glesmann, Omaha, Nebr., assignor to Bid-Well Corporation, Canton, S. Dak.

Filed June 3, 1971, Ser. No. 149,523
Int. Cl. E01c *19/22*
U.S. Cl. 404—119 **24 Claims**



A concrete finishing machine movable longitudinally of a roadway, or the like, with a concrete-surfacing unit movable back and forth transversely of the roadway, with movement of the machine and of the surfacing unit capable of being selectively either manually or automatically controlled.

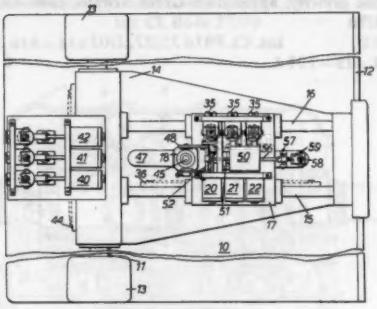
3,738,764
MEANS FOR PRODUCING RELATIVE MOVEMENT BETWEEN TWO BODIES

Maurice Woolmer Gribble, Marple, England, assignor to Ferranti Limited, Hollinwood, Lancashire, England

Division of Ser. No. 789,459, Jan. 7, 1969, Pat. No. 3,596,526.
This application May 11, 1971, Ser. No. 142,278
Int. Cl. B23b *39/08*; B23c *1/12*
U.S. Cl. 408—3 **8 Claims**

Means for movig one body relative to another comprises a main toothed rack carried on one body and at least three ac-

tuators carried on the other body. Each actuator carries a stub rack of similar form to the main rack and is operable to force the stub rack into engagement with the main rack. The spacing between the actuators is such that sequential operation of the actuators causes the bodies to move relative to one another in the required direction.



3,738,765

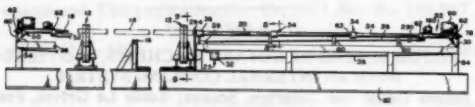
SEALING STRUCTURE FOR POLE BORING MACHINE

Milton H. Mater, 1415 Brook Lane, Corvallis, Oreg.

Division of Ser. No. 843,043, July 18, 1969, Pat. No. 3,598,393. This application Apr. 8, 1971, Ser. No. 132,539

Int. Cl. B23b *41/02*

U.S. Cl. 408—37 **3 Claims**



A pair of aligned drills each includes a drill tube carrying a drill bit including a forward pilot pin, forward cutters of a smaller diameter and rearward cutters of a larger diameter. The drill tube is rotated and drills an axial hole in a pole slightly larger than a guide tube, which extends to a point just behind the rearward cutters and journals the drill tube. Pressurized air fed into the guide tube through a rotary coupling travels through a venturi passage at the forward end of the guide tube and carries chips from the drill bit back through the drill tube. The guide tube is rotated slowly to dislodge chips and facilitate movement of the guide tube into the bore being formed. A carriage slidable on tubular ways and guides slidable on the ways support the guide tube and is moved forwardly slowly by a cable drive to feed the drill and is returned rapidly by the cable drive. The drills are moved forwardly from opposite ends of the pole to be drilled until one drill reaches the end of its feed stroke and then this drill is retracted while the other drill completes its stroke. A slidable interlock prevents the drills from coming together and reverses the motion of the carriage of one of the drills when the drills closely approach each other. Opposed clamps having generally V-shaped jaws on the ends of tongs grip and center the pole relative to the drills. The rotary coupling forms pressure-tight seals both with the drill tube and the guide tube. Spiders in the guide tube mount ball bearings journaling the drill tube and permit flow of air along the space between the drill tube and the guide tube.

3,738,766

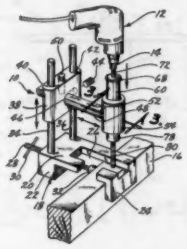
DOWEL HOLE DRILLING DEVICE

Walter Elder, Jr., Route No. 1, Waukee, Iowa

Filed Aug. 4, 1971, Ser. No. 169,012

Int. Cl. B23b *45/14*

U.S. Cl. 408—109 **2 Claims**



A dowel hole drilling device comprising a clamp means for maintaining the member to be drilled therebetween and a pair of support members extending upwardly therefrom. A support means is adjustably vertically mounted on the support members and has one end of an arm member selectively horizontally secured thereto. A vertically disposed guide collar is secured to the other end of the arm member and has a vertically movable drive member rotatably mounted therein. The upper end of the drive member is adapted to be secured to the chuck of an electric drill. The lower end of the drive member is adapted to have a drill bit secured thereto in a manner which permits the easy removal and insertion of the drill bit. A spring detent means is provided in the guide collar for yieldably maintaining the drive member in its uppermost position.

3,738,767

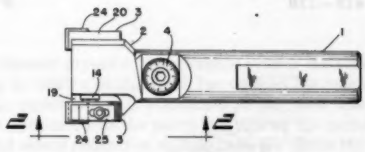
ADJUSTABLE BORING BAR

Milton L. Benjamin, and Wilbur N. Miles, both of Chagrin Falls, Ohio, assignors to Erickson Tool Company, Solon, Ohio

Filed July 15, 1971, Ser. No. 162,851

Int. Cl. B23b *29/034, 51/00*

U.S. Cl. 408—161 **4 Claims**

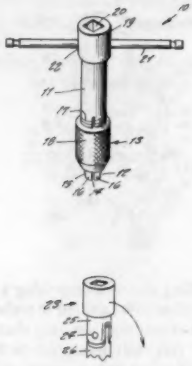


An adjustable boring bar characterized in that the bar has a transverse bore in which the overlapped shank portions of a pair of cutter elements are simultaneously moved radially outward or inward with respect to the longitudinal axis of the bar by screw actuated cam means which engages inclined surfaces of the respective shank portions. The screw actuated cam means comprises a nut movable in another transverse bore in the bar by rotation of a dial screw, said nut having an inclined cam face which engages a cam plunger which is longitudinally movable in a central longitudinal bore in the bar, said plunger having a V-shaped tongue which engages the respective inclined surfaces of the shank portions of the cutter elements. The adjustable boring bar herein is further characterized in that the cutter elements are of T-shaped configuration with the shanks overlapped as aforesaid in a transverse bore in the bar and with the crossbar portions guided and supported by integral shoulders formed on the bar, the cross bar portions having provision for mounting of carbide or like inserts.

3,738,768
TAP WRENCH WITH SWIVEL DRIVE

Russell P. Kuhn, 109 Tesing Circle, Bridgeport, Conn.

Filed Feb. 9, 1971, Ser. No. 113,900
Int. Cl. B25b *13/10, 13/44*
U.S. Cl. 408—240 1 Claim

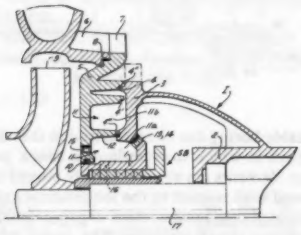


A drive tap wrench that is manually operable and which includes a removable cross-handle; the device being adaptable to be used as a conventional "T" tap wrench or which can be used with a¼ inch drive ratchet wrench.

3,738,769
HOUSING FOR CENTRIFUGAL PUMPS

Wolfgang Hanagarth, and Richard Schafer, both of 6710 Frankenthal/Pfalz, Germany, assignors to Klein, Schanzlin & Becker Aktiengesellschaft, 6710 Frankenthal/Pfalz, Germany

Filed Sept. 16, 1971, Ser. No. 188,706
Claims priority, application Germany, Sept. 16, 1970, P 20 45 685.3-15
Int. Cl. F01d *11/00*
U.S. Cl. 415—110 9 Claims

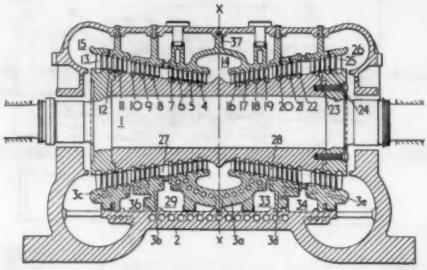


A centrifugal pump housing wherein the shaft sleeve, the cylindrical portion for reception of a stuffing box and a radial flange form a one-piece annular inlet section which is bolted to a wearing ring and a volute casing. The flange has several concentric annular ribs one of which is sealingly engaged by a single concentric rib of the wearing ring, or vice versa. This renders it possible to employ the same wearing ring for assembly with any one of several differently dimensioned inlet section, or to employ a single inlet section for assembly with any one of several differently dimensioned wearing rings.

3,738,770
TURBINES

John Reginald Bolter, Durham, England, assignor to Reyrolle Parsons Limited, Durham, England

Filed June 14, 1971, Ser. No. 152,557
Claims priority, application Great Britain, June 15, 1970, 28,905/70
Int. Cl. F01d *25/32, 3/02*
U.S. Cl. 415—121 A 6 Claims

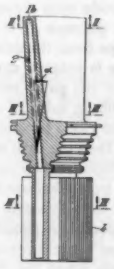


A vapor turbine arrangement comprising a turbine having a plurality of bladed rotor wheels and provided with means for extracting liquid entrained within the vapor passing through the main vapor flow path of the turbine, which means are positioned to extract the liquid at a stage of the vapor expansion within the turbine upstream of a final bladed rotor wheel at the low pressure end of the turbine and which extract a portion of the vapor together with the liquid, the arrangement further having means for the return of the vapor to the main vapor flow path of the turbine, subsequent to separation of the vapor and liquid, at a stage of the vapor expansion within the turbine where the pressure of the vapor is only slightly lower than the pressure at which it was extracted, the vapor being returned to up-stream of at least one bladed rotor wheel of the turbine.

3,738,771
ROTOR BLADES OF ROTARY MACHINES, PROVIDED WITH AN INTERNAL COOLING SYSTEM

Jeanne Genot Nee Delarbre, Sceaux; Emile Le Grives, Fontenay-aux-Roses, and Guy Berland, Chatillon, all of France, assignors to Office National d'Etudes et de Recherches Aerospatiales, Chatillon-sans-Bagneux, France

Filed July 15, 1971, Ser. No. 162,849
Claims priority, application France, July 20, 1970, 7026718
Int. Cl. F01d *5/18*
U.S. Cl. 416—96 7 Claims



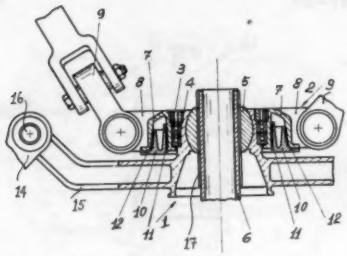
The cooling system is by phase transition in circulation in a closed cycle of a cooling fluid. The blade includes several closed elemental cavities, the wall of each elemental cavity including at least one continuous stria extending over its length along a helicoidal track. It is useful for aircraft gas turbine blades.

3,738,772

OSCILLATING PLATE FOR HELICOPTERS

Giorgio Parenti, Parma, Italy, assignor to SIAI-Marchetti S.p.A., Varese, Italy

Continuation-in-part of Ser. No. 23,067, March 26, 1970, abandoned. This application Mar. 7, 1972, Ser. No. 232,395
Int. Cl. B64c 27/74
U.S. Cl. 416—114 2 Claims



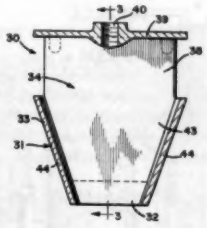
A dynamic oscillating plate is disclosed for use on a helicopter. The plate includes the combination of an upper forged ring having an over-turned U hollow section, and a lower forged ring having a U hollow section which is dimensioned to mate internally with the overturned U hollow section. The mating members form a rigid connection highly resistant to deflection and torsional forces when secured in mating position solely by engaging contact of mating arms of the U hollow sections, and without added mechanical engaging means.

3,738,773

BLADELESS PUMP IMPELLER

Walter H. Tinker, Frankfort, Ohio, assignor to The Tait Manufacturing Company, Dayton, Ohio

Continuation-in-part of Ser. No. 91,767, Nov. 23, 1970, abandoned. This application Oct. 20, 1971, Ser. No. 190,947
Int. Cl. F01d 1/34
U.S. Cl. 416—179 10 Claims



A bladeless pump impeller has a hollow, generally tubular body with an inlet end and an outlet end communicating with the hollow interior. The inlet to the impeller is of generally circular cross-section and the outlet is of generally oblong cross-section, the interior wall of the impeller providing a smooth transition from the inlet to the outlet.

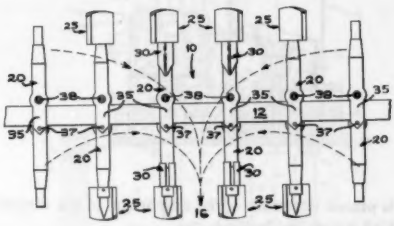
3,738,774

ASPHALT MIXER TIP AND SHANK ASSEMBLY

Kenneth V. Lutz, 19782 Glen Brae Drive, Saratoga, Calif.

Filed Dec. 16, 1971, Ser. No. 208,817
Int. Cl. B01f 7/04
U.S. Cl. 416—210 16 Claims

An asphalt mixer tip and shank assembly in which a pugmill shank is secured midway between its ends to a mixer shaft. The shank comprises a separable hub with complementary shaft gripping hub halves clamped to the mixer shaft by bolts interengaging the separable members. A mixer tip is detachably secured at each end of the shank. Each mixer tip is formed with an ear and a recessed portion to receive the distal end of its associated separable member of the shank and is secured to the shank by a pin passing through the ear to urge the shank into the recessed portion of the mixer tip in fixed relation thereto. A slip-on shroud is mounted on each end of the shank.

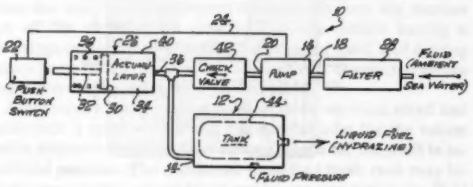


3,738,775

CONSTANT PRESSURE LIQUID SUPPLY SYSTEM

Alvah T. Strickland, Kailua, Hawaii, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 7, 1971, Ser. No. 187,484
Int. Cl. F04b 49/08; B65d 35/28
U.S. Cl. 417—38 6 Claims



A constant pressure liquid supply system including a tank having an inlet; a pump which has an inlet for receiving fluid and an outlet which is connected to the tank inlet; switch means connected to the pump for turning the pump on and off; and means responsive to fluid pressure within the tank and cooperable with the switch means for turning the pump on when the tank fluid pressure falls below a predetermined level and turning the pump off when the tank fluid pressure attains said predetermined level. A bladder for containing liquid may be mounted in the tank and may have an outlet which extends therefrom for discharging the liquid when squeezed down by fluid pressure within the tank.

3,738,776

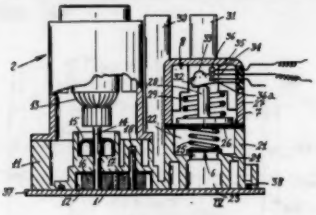
PUMPING DEVICE, ESPECIALLY FOR WATER SUPPLY

Jacques Debare, Tarbes, France, assignor to Societe Francaise D'Equipement Menagen, Lourdes, France

Filed Aug. 2, 1971, Ser. No. 168,213
Claims priority, application France, Sept. 24, 1970, 7034616
Int. Cl. F04b 49/02
U.S. Cl. 417—38 2 Claims

The invention relates to a pumping device comprising a pump driven by a motor, a diaphragm which is subjected to

the water pressure downstream of the pump and a contactor which is actuated by the diaphragm for the purpose of controlling the motor. The pump is of the gear type and a check-



valve is placed upstream of the diaphragm in the distribution line which is supplied by the pump.

The invention is of particular interest for the supply of water to caravans, bungalows or like premises.

3,738,777

ELECTROMAGNETIC CONVEYING TROUGH WITH COOLING CHANNELS

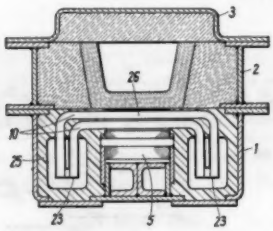
Axel von Starck, Luttringh, and Hans-Erwin Gerbig, Remscheid, both of Germany, assignors to AEG-Elotherm GmbH, Remscheid-Hasten, Germany

Filed Aug. 6, 1971, Ser. No. 169,766

Claims priority, application Germany, Sept. 30, 1970, P 20 48 026.6

Int. Cl. H02k *45/00*; H02n *4/20*

U.S. Cl. 417—50 **11 Claims**



An electromagnetic conveyor of the type having an obliquely ascending trough, a travelling field inductor mounted beneath the trough with a core and a polyphase winding comprised of solid, bare conductors carried by the core and a housing for receiving the heads of the windings which forms a cooling channel through which a liquid coolant, such as water, can circulate. The housing preferably also forms a return channel which communicates with the cooling channel at the upper end of the trough and the conductor portions in heat conducting relationship with the circulating coolant are preferably coated with electrical insulation to prevent electrochemical dissociation of the coolant. The cooling channel may be bounded by an electrically insulating compound which can be poured into the housing after a consumable core is first placed in the housing. After the compound has set, the core can be removed, for example by melting. The invention relates to an electromagnetic conveying trough comprising an obliquely ascending trough and, below the trough, a travelling field inductor having a laminated slotted sheet iron core carrying a polyphase winding. The bottom end of the conveying trough is usually connected to a melting or holding furnace containing a molten metal charge from which the electromagnetic field travelling toward the upper end of the trough conveys liquid metal to the top of the trough. The winding heads of the inductor windings are usually contained in winding head housings located on each side of the laminated core.

3,738,778

ELECTROMAGNETIC CONVEYING TROUGH

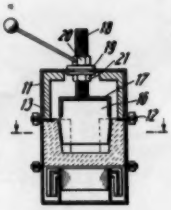
Axel Von Starck, Remscheid-Luttringhausen, and Hans Erwin Gerbig, Remscheid, both of Germany, assignors to AEG-Elotherm GmbH, Remscheid-Hasten, Germany

Filed Aug. 10, 1971, Ser. No. 170,475

Claims priority, application Germany, Jan. 16, 1971, P 21 02 074.6

Int. Cl. H02n *4/20*

U.S. Cl. 417—50 **7 Claims**



An electromagnetic conveying trough of the type having an upwardly sloping trough body in which the liquid metal that is to be conveyed is driven upwards by a traveling electromagnetic field generated by an inductor and a gate in the body of the trough for limiting the layer thickness of the liquid metal, the mean direction of the gate opening in a direction perpendicular to the effective component of the traveling electromagnetic field not exceeding 80 percent, and preferably not 75 percent, of the mean width of that portion of the trough that precedes the gate in the direction of axial flow.

3,738,779

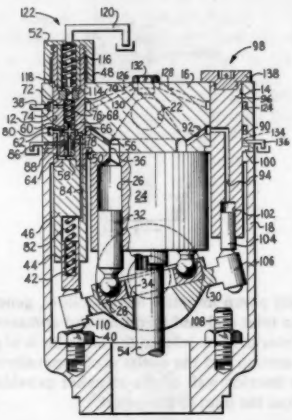
VARIABLE DISPLACEMENT PUMP HAVING PRESSURE COMPENSATION CONTROL MEANS

Allyn J. Hein, Joliet; Walter Z. Ruseff, New Lenox, and Gilbert Tribley, Joliet, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 28, 1971, Ser. No. 157,157

Int. Cl. F04b *49/00*

U.S. Cl. 417—213 **1 Claim**



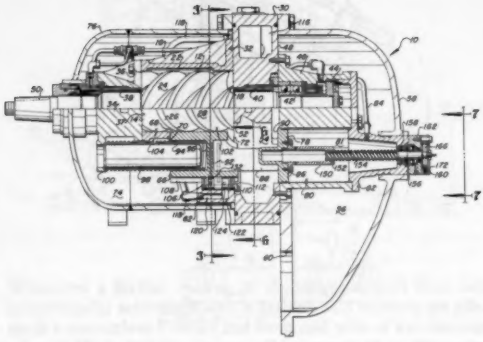
A variable displacement pump of the type having a plurality of rotatable, axially-aligned pistons guided by a pivotal swash plate for enabling adjustment of displacement and also having a sharp cutoff pressure compensator control means whereby the swash plate is shifted to its minimum displacement position when a predetermined maximum pressure is reached or when the pump load is in a neutral condition, thereby curtailing heat generation and horsepower loss.

3,738,780

CAPACITY CONTROL VALVE FOR SCREW COMPRESSOR

Soren E. H. Edstrom, Quincy, Ill., assignor to Gardner-Denver Company, Quincy, Ill.

Filed Nov. 5, 1971, Ser. No. 196,056
Int. Cl. F04b *49/02*, *49/08*; F01c *1/16*
U.S. Cl. 417—281 13 Claims



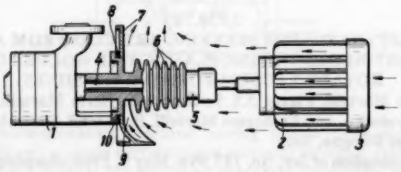
A capacity control valve for a liquid injected helical screw gas compressor comprising an axially slidable wall portion of the compressor casing. The control valve body is integrally formed with a piston for a hydraulically actuated valve positioning cylinder, and is arranged in the compressor housing to respond to compressor discharge gas acting thereon to tend to move to a minimum capacity or open position. The capacity control valve is guided in the rotor housing by a cylindrical guide pin having passages for conducting compressor injection liquid to the compressor working chamber. The guide pin is interchangeable to provide for alternate locations for injecting liquid into the working chamber. The capacity control valve is operable to be positively locked in a predetermined axial position by a locking lever controlled from the exterior of the compressor.

3,738,781

PUMP UNIT FOR CONVEYING HIGH TEMPERATURE MEDIA

Walter Hagemann, Itzehoe-Nordoe, and Erwin Zimmermann, Heiligenstedten-Julianka, both of Germany, assignors to Siemens & Hinsch mbH, Itzehoe/Holstein, Germany

Filed Dec. 14, 1970, Ser. No. 97,910
Claims priority, application Germany, Dec. 23, 1969, P 19 64 474.7
Int. Cl. F04d *7/06*, *13/06*
U.S. Cl. 417—423 R 6 Claims



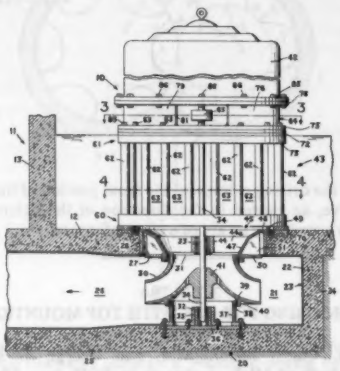
A pump unit for conveying high temperature media having an air cooled drive motor and a centrifugal pump wherein said drive motor is mounted so as to cause cooling air to pass over the shaft sealing housing and reduce the temperature in the area of the shaft packing.

3,738,782

CENTRIFUGAL PUMP WITH CONCRETE VOLUTE

Warren H. Fraser, Westfield, N.J., assignor to Worthington Corporation, Harrison, N.J.

Filed Sept. 1, 1971, Ser. No. 176,929
Int. Cl. F04b *17/00*
U.S. Cl. 417—424 18 Claims



A Centrifugal Pump disposed in a reinforced concrete reservoir with a free standing body of fluid to be pumped which has a concrete volute having one side thereof formed by a part of the reservoir to permit the suction inlet of the volute to be connected into the lower portion of said reservoir, a rotatable shaft vertically disposed in the suction inlet and extends into the volute to receive an inverted impeller at one end, the suction eye of the impeller which is at the upper end communicate with the suction inlet of the volute so that fluid from the reservoir is delivered downwardly into the suction eye of the impeller by gravity flow, the volute having a discharge outlet for discharging the pumped fluid, and driving means for rotating the shaft and impeller is connected to the end of the shaft remote from the imepller.

Additionally in the present disclosure a combined stand and trash rack is connected about the suction inlet for the volute and is disposed to support the driving means for the shaft in assembled position. The combined stand and trash rack may include vane means adjustable to guide or to prerotate the fluid delivered from the reservoir to the suction inlet of the volute for the pump.

3,738,783

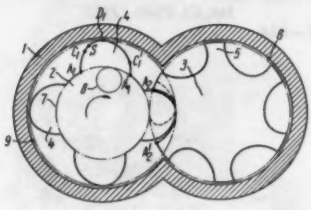
SCREW ROTOR MACHINE FOR COMPRESSIBLE MEDIA

Pavel Evgenievich Amosov, Kronverkskaya ulitsa, 29/37, kv. 87; Leonid Mikhailovich Imyanitov, 6-ya Sovetskaya ulitsa, 33, kv. 4; Vitaly Konstantinovich Smekhov, ulitsa Kolomenskaya, 33/40, kv. 25; Valery Leonidovich Trofimov, ulitsa Matrosova, 12, kv. 8, all of Leningrad; Avely Isaich Shvarts, ulitsa Kosmonavtov, 3, kv. 45, and Vladimir Borisovich Shnepp, ulitsa Zarya, 4, kv. 5, both of Kazan, all of U.S.S.R.

Filed Oct. 20, 1970, Ser. No. 82,296
Claims priority, application U.S.S.R., Oct. 20, 1969, 1367354
Int. Cl. F01c *1/16*, *1/24*; F04c *1/10*, *1/14*
U.S. Cl. 418—201 2 Claims

A screw profile machine for compressible media, in which the profile of the head of the lobes of a driving rotor is formed by two portions of epicycloids interconnected by a conjugating curve. The rear portion of the conjugating curve, as viewed in the direction of the driving rotor rotation, is a portion of an elongated hypocycloid formed as a result of oscillations of a generating circumference along the inner side of the

initial circumference of the driving rotor with a point disposed outside the generating circumference whose radius is greater than zero but is smaller than the radius of the initial circumference of the driving rotor, and the front portion of the conjugating curve, as viewed in the direction of the driving rotor rotation, is essentially an arc of a circumference.



3,738,784

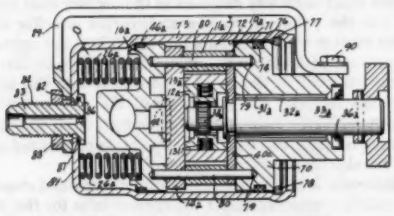
PUMP HOUSING FOR USE WITH TOP MOUNTED OR REMOTE MOUNTED RESERVOIRS

Hubert M. Clark, Birmingham, and George A. Berman, Detroit, both of Mich., assignors to TRW Inc., Cleveland, Ohio

Filed Dec. 17, 1970, Ser. No. 99,057

Int. Cl. F01c *21/00*; F03c *3/00*; F04c *15/00*

U.S. Cl. 418—270 **1 Claim**



A compact housing construction for a power booster pump of the type having a stack-up of parts forming an operative pump unit wherein first and second axially disposed housing parts together form a cylindrical housing envelope for closing the stack-up of parts, the parts being sized and shaped to form complementary inner and outer diameters with a seal groove and a locking groove formed therein so that one part may be inserted within the other. One of the parts has an inlet opening for connection to a top mounted or remote mounted reservoir.

3,738,785

APPARATUS FOR PROCESSING OF FINELY DIVIDED PARTICULATE MATERIALS

Helmut Reinhardt, Weiss near Cologne; Bernd Brandt, and Albert Peters, both of Wesseling-Berzdorf, all of Germany, assignors to Deutsche Gold-Und Silber-Scheideanstalt Vormals Roessler, Frankfurt am Main, Germany

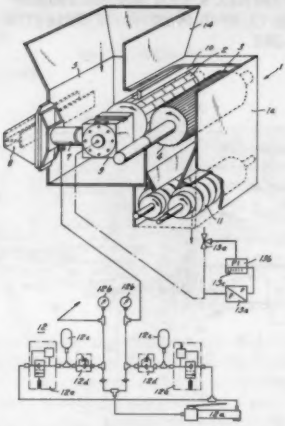
Filed Nov. 6, 1969, Ser. No. 874,654

Claims priority, application Germany, Nov. 8, 1968, P 18 07 714.0

Int. Cl. B29d *7/00*

U.S. Cl. 425—85 **15 Claims**

A mass of finely divided material is confined in a chamber. Two rollers are arranged for rotation in the chamber in axial parallelism with one another and define with each other a narrow longitudinally extending gap. At least one of the rollers has a circumferential wall composed of gas-permeable porous material. This one roller is hollow and arranged to communicate with a source of underpressure so that, as the roller rotates, the particulate material is attracted onto its outer surface forming a layer thereon which is subjected to substantial compaction when it passes through the gap between the two rollers. The rollers rotate in opposite direction. The compacted material is removed from the outer surface of the roller or rollers and subdivided into portions of desired size. A method of processing the particulate material, and a roller for use in the apparatus are also disclosed.



3,738,786

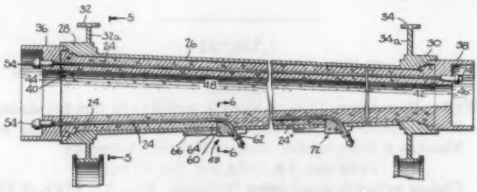
REINFORCEMENT OF CONCRETE STRUCTURES

Myers Van Buren, Cheriton, Va., assignor to Bayshore Concrete Products Corp., Cape Charles, Va.

Division of Ser. No. 8,139, Jan. 16, 1970, which is a division of Ser. No. 639,371, May 18, 1967, Pat. No. 3,501,881. This application June 9, 1971, Ser. No. 151,284

Int. Cl. B28b *23/06*

U.S. Cl. 425—111 **9 Claims**



Use of pretensioned elongated reinforcing rods in concrete structures, the rods being terminated at various intermediate ends of the structure, and special anchor arrangements for permitting intermediate termination of the rods.

3,738,787

APPARATUS FOR SEVERING ARTICLES FROM A CONTINUOUS THERMOPLASTIC WEB MOLDED ON ROTARY VACUUM-FORMING MACHINES

Guido Martelli, Piazza XX Settembre 5; Nerio Martelli, Via Cavaloni 6, and Francesco Martelli, Piazza XX Settembre 5, all of Bologna, Italy

Continuation of Ser. No. 727,990, May 9, 1968, abandoned. This application Nov. 17, 1970, Ser. No. 90,448

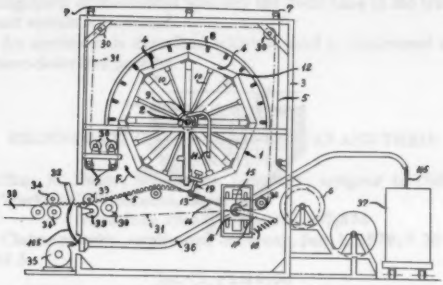
Claims priority, application Italy, May 9, 1967, 6985 A/67; Sept. 27, 1967, 7330 A/67

Int. Cl. B29c *17/04*

U.S. Cl. 425—142 **6 Claims**

Apparatus for severing articles molded in a web of thermoplastic material in vacuum-forming machines comprising a

rotary drum on the periphery of which mold are mounted under the action of heating and suction means, the said web being first cut into quadrangular sections by co-action of cutting edges provided transversally on the drum with swinging cutter means mounted in proximity of the same drum.



Whenever a further cutting of the single articles from said quadrangular sections of web is desired, said sections are piled up in a convenient number and from said piles of web sections piles of single articles are cut off by means of reciprocating cutters, which may have shaped cutting edges.

3,738,788

BLOW-MOULDING MACHINES

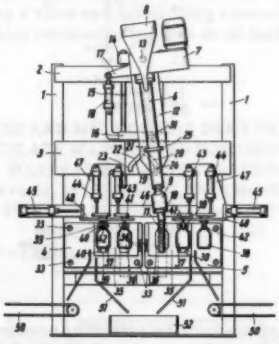
Erhard Langecker, Hohbuschener Weg 5, Meinerzhagen, Germany

Filed May 24, 1971, Ser. No. 146,307

Claims priority, application Germany, May 25, 1970, P 20 26 972.1

Int. Cl. B29d 5/06

U.S. Cl. 425—326 **8 Claims**



A blow-moulding machine having a pair of stationary moulds and a single vertically and pivotally movable extruder above the moulds for supplying extrudate alternately to the respective moulds, movements of the extruder being controlled by a guide track arrangement and a piston and cylinder assembly, and each mould comprising a moulding cavity and a waste removal and ejecting cavity transfer means being provided for transferring a blown product from the moulding cavity to the waste removal and ejecting cavity.

3,738,789

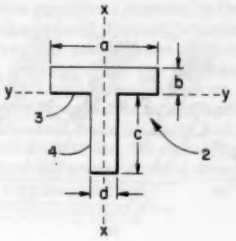
APPARATUS FOR EXTRUDING FILAMENTS HAVING ASYMMETRIC CROSS-SECTION

Byar Hazim Shemdin, Brooklyn, N.Y., assignor to Fiber Industries, Inc., Charlotte, N.C.

Division of Ser. No. 14,352, Feb. 26, 1970, Pat. No. 3,652,753. This application Nov. 2, 1971, Ser. No. 195,028

Int. Cl. B29f 3/04

U.S. Cl. 425—464 **4 Claims**



A process to reduce kneeing during the melt spinning of continuous filaments through a T-shaped orifice by selecting dimensions of the orifice so that its extrusion factor is within a defined range.

3,738,790

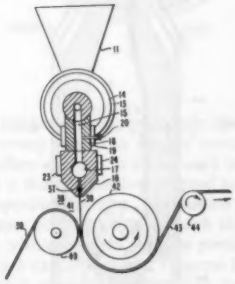
APPARATUS FOR EXTRUDING A FILM OF THERMOPLASTIC MATERIAL HAVING PREDETERMINED ZONES OF DIFFERENT FILM THICKNESS

Glenn M. Violette, R.D. 1, Greenwich; Leon J. Paquin, 18 Achley Pl., Glens Falls, both of N.Y., and James A. Lock, 3762 San Juan Hill, Mobile, Ala.

Division of Ser. No. 835,837, April 3, 1969, which is a division of Ser. No. 700,968, June 26, 1968, abandoned. This application Nov. 3, 1970, Ser. No. 86,626

Int. Cl. B29f 3/04

U.S. Cl. 425—467 **7 Claims**

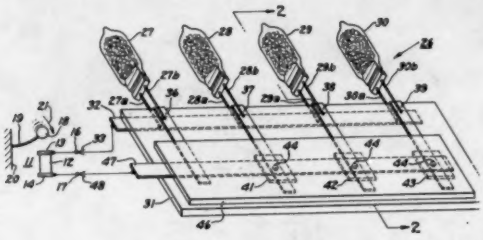


The present invention contemplates an apparatus, a process and a product produced by the process, whereby preselected areas of a moving paperboard substrate are coated with a thermoplastic film having zones of different thickness, so that the substrate areas are in predetermined registry with the film zones, by employing a threaded deckle rod during the extrusion of the thermoplastic film. The threaded deckle rod imparts the varying thickness profile to the film.

3,738,791
ARC-GAP CONSTRUCTION FOR FLASHING HIGH-VOLTAGE PHOTOFLASH LAMPS

George W. Cressman, Chagrin Falls, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed July 22, 1971, Ser. No. 165,133
Int. Cl. F21k *5/02*
U.S. Cl. 431—95 12 Claims

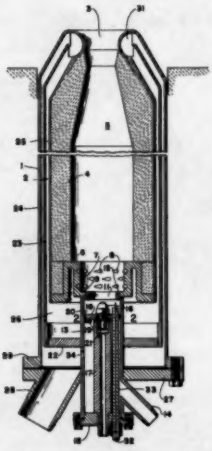


A construction of arc gaps in series with high-voltage photoflash lamps, for improving reliability of flashing and for causing sequential flashing of lamps of an array of flash lamps, by means of high-voltage firing pulses such as are produced by impacting a piezoelectric element in synchronism with the opening of a camera shutter. The arc gaps comprise a pair of electrodes spaced apart by an intervening member of dielectric material providing parallel dielectric and air paths between the electrodes.

3,738,792
INDUSTRIAL BURNER

Chung Liao Feng, Dresher, Pa., assignor to Selas Corporation of America, Dresher, Pa.

Filed Feb. 11, 1972, Ser. No. 225,583
Int. Cl. F23r *1/00*
U.S. Cl. 431—158 5 Claims

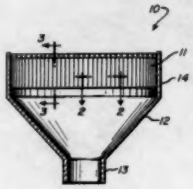


The invention relates to an industrial burner of the combustion chamber type that is used for submerged combustion. The burner will operate on gas or oil as a fuel.

3,738,793
ILLUMINATION BURNER

Jack M. Reid; Sanford A. Weil; David M. Mason, and William R. Staats, all of Chicago, Ill., assignors to The Institute of Gas Technology, Chicago, Ill.

Filed Oct. 20, 1969, Ser. No. 867,482
Int. Cl. F23d *13/12*
U.S. Cl. 431—328 1 Claim

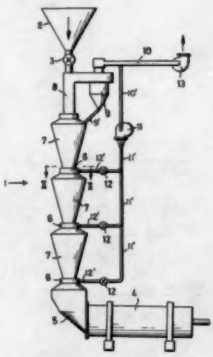


A gas illuminating burner in which a gas mixture is delivered through a porous ceramic support and a heat radiating layer of a metal oxide to a layer which is a mixture of thorium and cerium oxides. The gas mixture burns in an improved manner at the upper surface of the layer of oxides.

3,738,794
PROCESS AND APPARATUS FOR PREHEATING POWDER

Johannes Thelen, Bergisch-Gladbach, Germany, assignor to Walther & Cie Aktiengesellschaft, Cologne-Delbrueck, Germany

Filed July 13, 1971, Ser. No. 162,041
Claims priority, application Germany, Mar. 17, 1970, P 21 12 837.0
Int. Cl. F27b *15/00*
U.S. Cl. 432—14 17 Claims



A process and apparatus for preheating powder is disclosed. The process, useful for heating finely divided particulate material, such as unrefined cement powder, involves feeding the powder to be treated into a cascade of vertical treatment vessels, generally arranged in a vertical direction, the interior of the treatment vessels being in communication with one another. The powder to be treated is released into said cascade arrangement and permitted to fall through the individual treatment vessels under the influence of gravity. Hot combustion gases are passed in an upward direction through the cascade arrangement of treatment vessels in counterflow to the descending powder and is removed at the top of the entire arrangement, this being the point where the feeding of the

powder to be treated takes place. A portion of the hot combustion gases which are removed from the top of the cascade arrangement, now cooler than when first fed into the bottom of the treatment vessels, are injected, under pressure, at distributed points along the cascade arrangement, preferably at the mating points between adjacent treatment vessels, through helical ducts which impart to the descending powder a helical component of movement whereby the dwell time in the treatment vessels is increased.

An apparatus is described which is used to implement the above-described process.

3,738,795

REGENERATIVE HOT-BLAST STOVES AND THEIR OPERATION

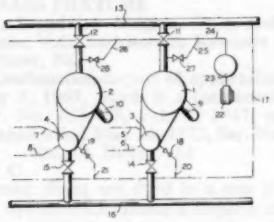
Arthur R. Heuer, Wiesbaden, Germany, assignor to Didier Werke AG, Wiesbaden, Germany

Filed June 29, 1971, Ser. No. 157,874

Claims priority, application Germany, July 1, 1970, P 20 32 498.5

Int. Cl. F23l 9/00

U.S. Cl. 432—28 **6 Claims**



A method and apparatus for operating regenerative hot-blast stoves which are heated successively or alternately to supply the hot-blast required in blast furnaces. Each furnace is provided with a group of at least two hot-blast stoves which share a common cold air supply manifold and a common hot-blast pipe leading to the furnace. The stove which is ready to go on-wind is first filled with compressed air from a source independent of the cold air supply manifold and then is directed to the cold air supply manifolds. Each blast furnace stove is connected by a valve controlled filling connection to a common filling pipe communicating with an air tank connected to a blower.

3,738,796

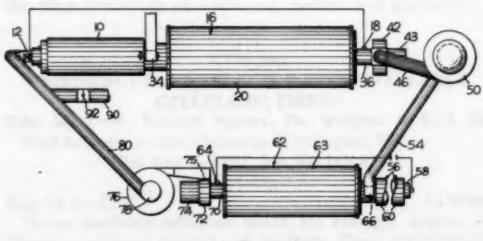
APPARATUS AND METHOD FOR DEHYDRATING WET PARTICULATE MATTER AND FOR DISPOSING OF WASTE PRODUCTS THEREFROM

William A. Arnold, 2415 S. 65th St., W. Allis, Wis.

Filed Sept. 15, 1971, Ser. No. 180,702

Int. Cl. F26b 7/00; F27b 7/00

U.S. Cl. 432—106 **14 Claims**



Apparatus and method for two-stage dehydration of wet particulate matter (such as green forage chops) and disposition of waste products produced during the second stage of dehydration, such as gases, smoke and charred particles, comprise: a first furnace for firing a first dryer in which the chops are partially dried; a first dryer fan for drawing the chops through the first dryer and for disposing of hot moist air; a second furnace for firing a second dryer in which the chops are finally dried and wherein the waste products are produced, the second dryer having a smaller air-handling capacity than the first dryer; transfer means for delivering the partially-dried chops from the first dryer to the second dryer and including either a first cyclone separator connected to the first dryer fan or a material discharge hood disposed between the first dryer and the first dryer fan and a conveyor connected to the discharge hood; a second dryer fan for drawing the chops through the second dryer; a second cyclone separator connected to the second dryer fan for separating the finally-dried chops from the aforesaid waste products; and means, including a conduit and booster fan, for delivering the aforesaid waste products from the second cyclone separator to the first furnace wherein they are consumed.

3,738,797

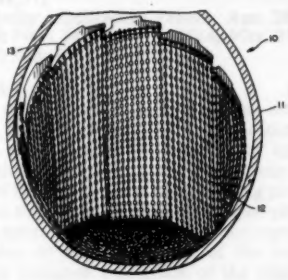
KILN CHAIN HANGER

Gary E. Robinson, and Floyd O. Smith, both of Portland, Oreg., assignors to Esco Corporation, Portland, Oreg.

Filed Mar. 1, 1972, Ser. No. 230,805

Int. Cl. F27b 7/20

U.S. Cl. 263—33 C **9 Claims**



A kiln chain hanger for supporting kiln chains along a helical path in a rotary kiln. The hanger includes a generally planar base portion adapted to be secured to the wall of the rotary kiln and a shackle portion adapted to support one or more chain-supporting shackles. The shackle portion includes a generally planar attaching lug for each shackle which extends angularly with respect to the base portion and connecting portions which extend between adjacent lugs. An opening for a shackle pin is provided through each lug, the axis of the opening extending perpendicularly to the plane of the lug. The base is adapted to be secured to the rotary kiln along the helical path, and the angle between the axis of each shackle pin opening and the base is such that the axis extends perpendicularly to the direction of the force exerted by the hanging chain. If the hanger is to be used in a curtain hung system, the axis of each pin opening, and therefore the shackle pin, will extend parallel to the axis of the rotary kiln. If the hanger is to be used in a garland hung system, the axis of each opening will extend angularly with respect to the kiln axis and perpendicular to the direction of the chain pull.

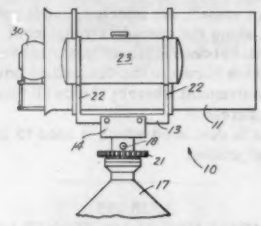
3,738,798

ANTI-POLLUTION PORTABLE OIL HEATER

Lewis M. D. Grainger, Route 1, Glen Allen, Va.

Continuation-in-part of Ser. No. 182,456, Sept. 21, 1971. This application Apr. 11, 1972, Ser. No. 242,928
Int. Cl. F23l 5/00
U.S. Cl. 432—222 5 Claims

An anti-pollution portable oil heater which is adapted to be mounted on a mobile apparatus and arranged for oscillation or rotation about a vertical axis so as to spread the heat over wide areas such as orchids, warehouses and other locations where it is essential to heat both interior and exterior areas. The heater includes a pollution free oil burner having both a primary and a secondary combustion chamber to burn all pollutents resulting from the products of combustion. The secondary combustion chamber is surrounded by an insulating shield and is positioned in a cylindrical housing having an air supply fan at the upstream end thereof, which directs air over the secondary combustion chamber and to become heated thereby for discharge along with the products of combustion from the secondary combustion chamber into the area to be heated.



CHEMICAL

3,738,799

DYEING HUMAN HAIR WITH 2-AMINOPHENOLS

Gregoire Kalopissis, Paris, and Andree Bugaut, Boulogne sur Seine, both of France, assignors to L'Oreal, Paris, France

Continuation-in-part of Ser. No. 645,521, June 12, 1967, abandoned, which is a continuation-in-part of Ser. No. 293,282, July 8, 1963, abandoned. This application Aug. 31, 1970, Ser. No. 68,488

Int. Cl. A61k *7/12*

U.S. Cl. 8—10.2 9 Claims

Hair dye compositions that contain a dye compound selected from the group consisting of 6-amino-4-methoxy-2-aminophenol, 5-amino-4-methoxy-2-aminophenol, 6-amino-4-dimethylamino-2-aminophenol, 6-amino-4-diethylamino-2-aminophenol and 4-diethylamino-2-aminophenol.

3,738,800

DISPERSE AND DIRECT TEREPHTHALOYL CHLORIDE-AMINOAZOBENZENE COTTON DYE MIXTURE AND POLYESTER AND CELLULOSE DYEING WITH SAID MIXTURE

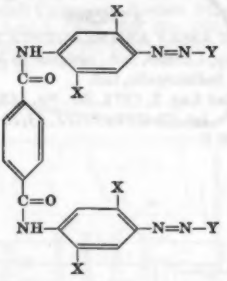
Anton Mudrak, Broadview Heights, Ohio, and John A. Zelek, Gastonia, N.C., assignors to Kewanee Oil Company, Bryn Mawr, Pa.

No Drawing. Continuation-in-part of application Ser. No. 821,977, May 5, 1969, which is a continuation of application Ser. No. 613,408, Feb. 2, 1967, now abandoned. This application May 24, 1972, Ser. No. 256,525

Int. Cl. D06p *3/82*

U.S. Cl. 8—21 C 6 Claims

Cotton/polyester fibers are dyed in a one step dyeing process using a dye bath containing a disperse dye for the polyester and a direct dye having good resistance to degradation at the high temperature required for dyeing polyester fibers. The direct dye is selected from a group of compounds that are derived by the reaction of terephthaloyl chloride with various amino-azobenzene compounds and are represented by the formula



wherein Y represents a group selected from the class consisting of $-C_6H_4SO_3Na$, $-C_{10}H_5(SO_3Na)_2$, and $-C_6H_3(OH)COONa$, and X is a group selected from the class consisting of hydrogen, methyl and methoxy.

3,738,801

UNIFORMLY DYED YELLOW WATER SWELLABLE CELLULOSIC FIBERS

John Blackwell, Kennett Square, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 6, 1971, Ser. No. 169,832

Int. Cl. D06p *3/82*

U.S. Cl. 8—21 C 3 Claims

Water swellable cellulosic fibers, for example, cotton, or blends or mixtures thereof with synthetic fibers, for example, polyester fibers, uniformly dyed in fast yellow shades with 2,2'-(azo-di-p-phenylene)-bis(6-methylbenzothiazole).

3,738,802

POLYAMIDE FIBERS DYED WITH THIADIAZOLYL AZO COMPOUNDS

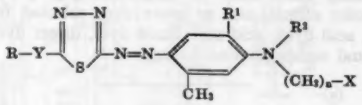
Max A. Weaver and David J. Wallace, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original application June 16, 1969, Ser. No. 833,745, now Patent No. 3,657,187. Divided and this application Jan. 6, 1972, Ser. No. 215,915

Int. Cl. C09b *29/36*

U.S. Cl. 8—41 B 9 Claims

Polyamide fibers are dyed bright, fast red to pink shades with a compound having the formula



in which R is an alkyl, allyl, aryl, or cyclohexyl radical; Y is —O— or —S—; R^1 and R^2 each is hydrogen or alkyl; *n* is 2 or 3; and X is pyrrolidinono, acylamide, carbamoyl or acyloxy.

3,738,803

DYEING OF TEXTILE FIBERS IN A SOLVENT MEDIUM

Remy Blanc, Lyon, Willy Hess, Limas, and Georges Ramier, Villefranche-sur-Saone, France, assignors to S.T.X., Groupement d'Interet Economique, Paris, France

No Drawing. Continuation-in-part of application Ser. No. 33,094, Apr. 29, 1970. This application Dec. 12, 1971, Ser. No. 210,571

Claims priority, application France, Apr. 30, 1969, 6912355; Nov. 26, 1969, 6940684; Mar. 20, 1970, 7011537; Feb. 2, 1971, 7105279

Int. Cl. D06p *1/68*

U.S. Cl. 8—93 22 Claims

Treatment of textile fibers such as dyeing, sizing, mothproofing, etc. is accomplished by the "exhaustion" method using a bath of a solvent for the treating agent and a diluent in which the treating agent is relatively insoluble, at an elevated temperature, the solvent being progressively removed from the bath in the liquid or vapor phase during the treating operation resulting in a homogeneous and resistant dyeing or other treatment of the textile fibers and a neaarly complete exhaustion of the treating agent.

3,738,804

DYEABILITY OF MELT BLEND FIBERS WITH HIGH ELECTRON AFFINITY DYES

Orvill E. Snider, 1911 Coggin St., Petersburg, Va.; James E. Loughlin, 4230 Denbigh Drive, Charlotte, N.C.; and Hans Ortheil, Melody Lane, Rte. 8, Spartanburg, S.C.

No Drawing. Original application Nov. 13, 1967, Ser. No. 682,572. Divided and this application Apr. 8, 1971, Ser. No. 132,549

Int. Cl. D06p *3/82*

U.S. Cl. 8—15 2 Claims

Fibers are prepared which are comprised of 4–50 parts by weight of a substantially linear fiber-forming polyester having recurring cyclic structure in the polymer backbone dispersed in a continuous body of 50–96 parts by weight of a linear fiber-forming polyamide, said fiber having at least 5,000 polyester microfibrils per 1,000 square microns cross section and is dyed with an azo disperse dye having a solubility of less than 0.1 gram in 100 cc. of water and which has an apparent electron affinity of greater than 3 electron volts, said azo disperse dye having one or more

electron attracting substituent moieties, and there may be simultaneously present electron repelling substituent moieties, provided the sum of the charges of the electron attracting moieties are at least 0.5 electron volt greater than the sum of the electron repelling moieties. The fibers may be blended with other fibers to form fabrics having novel effects.

A process for producing said dyed polyblend fibers or fabric therefrom comprising dyeing in an aqueous medium at a temperature of at least 150° F. as the sole fiber in the textile article or in combination with at least one other fiber selected from the group consisting of polyamide, polyester, polyacrylonitrile, polypropylene, cotton, silk and wool, said dye being solely an azo disperse dye having an electron affinity of at least 3.0 electron volts and alternately there may be simultaneously present, for multicolor effects, one or more dyes selected from the group, acid dyes, acid metallized dyes, direct dyes, basic dyes, and anthraquinone disperse dyes.

3,738,805
METHOD OF PRODUCING PURIFIED ASBESTOS STRUCTURES

Hans Fetzer, Schwabisch Hall, Germany, assignor to Rex Asbestwerke Graf von Rex KG., Schwabisch Hall, Germany

No Drawing. Filed June 8, 1971, Ser. No. 151,141
Claims priority, application Germany, Dec. 4, 1970, P 20 59 845.2
Int. Cl. D01f 9/06
U.S. Cl. 8—137.5 **3 Claims**

Method of producing purified, shaped asbestos structures which are obtained by processing and coagulating dispersions of asbestos fibers containing organic additives. The structures are purified to remove residues of the organic additives. The purification is effected by subjecting the structures to a solvent treatment with a lower aliphatic alcohol and/or an aqueous solution of an organic base. The lower aliphatic alcohol may be used in mixture with aqueous inorganic bases.

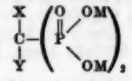
3,738,806
PROCESS FOR THE PREVENTION OF CORROSION

William A. Feiler, Jr., Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

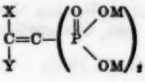
No Drawing. Filed Jan. 26, 1968, Ser. No. 700,730
Int. Cl. C23f 11/16
U.S. Cl. 21—27 **9 Claims**

A method of inhibiting the corrosion of ferrous metals and nonferrous metals in contact with an aqueous corrosive medium which comprises maintaining in said medium a complex formed by (1) an organo-phosphorus ligand selected from the group consisting of:

(a)



(b)



(c) and mixtures thereof

wherein X and Y each are hydrogen, hydroxyl, lower alkyl group containing 1 to 4 carbon atoms, or lower alkenyl group containing 2 to 4 carbon atoms, and M is hydrogen, ammonium, alkali metal or lower alkyl amine and (2) a metal ion which includes zinc, nickel, cobalt, cerium, lead, tin, calcium, ferrous, ferric, chromium, chromic, mercurous, mercuric, or manganese for example, a complex formed by the divalent ion zinc, and the ligand 1-hydroxy-1, 1-ethylidene diphosphonic acid.

3,738,807
METHODS OF REDUCING WATER EVAPORATION

Samuel I. Horowitz and Robert J. Kufrin, Verona, N.J., assignors to Witco Chemical Corporation, New York, N.Y.

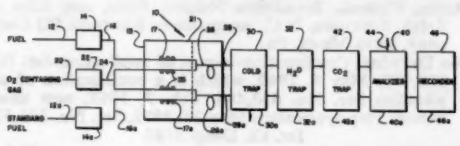
No Drawing. Filed Sept. 20, 1971, Ser. No. 182,255
Int. Cl. B01j 1/18
U.S. Cl. 21—60.5 A **9 Claims**

Water loss due to evaporation from a body of water in a catchment, reservoir, channel, and the like, is inhibited by applying a liquid bitumen-polyurethane composition on the surface of said body of water, said polyurethane being cured in situ on said body of water to form a continuous cohesive thin thermoplastic bituminous membrane on the surface of the water.

3,738,808
OCTANE MONITORING

Glenn P. Cunningham, Gibsonia, and John G. Larson, Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Mar. 18, 1971, Ser. No. 125,687
Int. Cl. G01n 33/22
U.S. Cl. 23—230 PC **14 Claims**

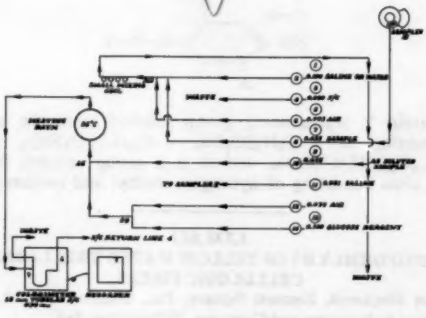


Means to determine a characteristic of a hydrocarbon, such as the octane rating of gasoline, by reacting known amounts of the hydrocarbon with an oxygen containing gas, such as air, under certain conditions to maintain a mild reaction less vigorous than an explosion or even a cool flame. The amount of oxygen consumed is directly correlatable to the characteristic of interest.

3,738,809
GLUCOSE ASSAY AND REAGENTS THEREFOR

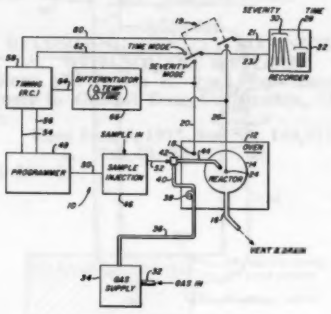
Jerry W. Deaney, Carmel, Ind., assignor to American Monitor Corporation, Indianapolis, Ind.

Filed Aug. 2, 1971, Ser. No. 168,020
Int. Cl. G01n 31/22, 33/16
U.S. Cl. 23—230 B **12 Claims**



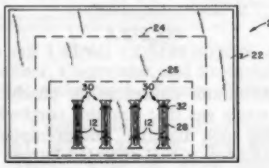
A colorimetric or spectrophotometric glucose assay, of ortho-toluidine type, in which certain dicarboxylic acids (succinic acid and hydroxysuccinic acid) or a tricarboxylic acid, citric acid, provide the promoter of the reaction of an aromatic amine with glucose, in a solvent system containing ethylene glycol or propylene glycol, desirably in the presence of a small amount of water.

3,738,810
OCTANE ANALYZER
Russell M. Clinton III, Gibsonia, and Thomas J. Puzniak, Cheswick, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
Filed Aug. 31, 1971, Ser. No. 176,593
Int. Cl. G01l 23/22; G01n 33/22
U.S. Cl. 23—230 PC 27 Claims



Means to determine a characteristic of a hydrocarbon, such as the octane rating of gasoline, by reacting a sample of the hydrocarbon with an oxygen containing gas, such as air, under certain conditions to maintain a mild reaction less vigorous than an explosion. The time elapsed between injection of the hydrocarbon into the gas stream and reaction of the hydrocarbon with the oxygen in the gas, and/or some facet of the severity of the reaction, are correlatable to the value of the characteristic of interest of that hydrocarbon.

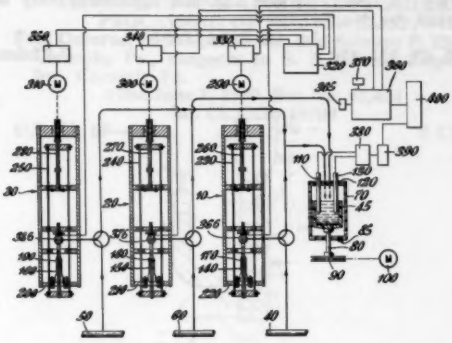
3,738,811
RESIDUAL ALKYLATING AGENT DETECTOR AND METHOD THEREFOR
Shu-Sing Cheng, Carpentersville, Ill., assignor to The Kendall Company, Boston, Mass.
Filed July 1, 1971, Ser. No. 158,764
Int. Cl. B65d 79/00; G01n 31/22, 33/16
U.S. Cl. 23—232 R 26 Claims



A frangible ampule constructed of material which is impermeable to alkylating agent, and containing an indicator; the device is suitable for monitoring residual alkylating agent inside a sterile, sealed package.

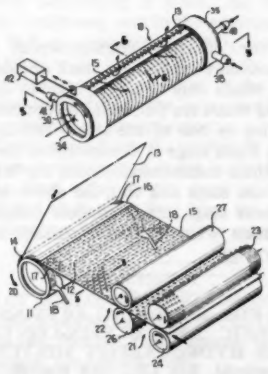
3,738,812
AUTOMATIC CHEMICAL ANALYZER
James M. Berry, South Charleston, Wallace E. Byrd and Ronald D. Dillon, Charleston, Carroll E. Dunn, Eleanor, and Sterling T. Martin, S.E. Charleston, W. Va., assignors to Ionics Incorporated
Filed July 27, 1971, Ser. No. 166,463
Int. Cl. G01n 27/36, 31/16
U.S. Cl. 23—253 R 5 Claims

Apparatus for measuring the concentration of a sample solution including means for mixing reagent solution of known concentration with a known volume of sample solution. Means are included to provide an electrical signal corresponding to the instantaneous concentration of a particular ion of the sample-reagent mixture. When the first derivative of the electrical signal is a maximum,



means are provided to compare electrical signals corresponding to sample volume, reagent concentration and reagent volume to provide a signal corresponding to sample concentration.

3,738,813
MASS-TRANSFER DEVICE AND METHOD OF MAKING SAME
William G. Esmond, 537 Stamford Road, Baltimore, Md. 21229
Filed June 4, 1971, Ser. No. 149,951
Int. Cl. A61m 1/03
U.S. Cl. 23—258.5 10 Claims



A transfer device which is particularly useable as a device for oxygenating blood. The device simply consists of a tubular support form about which an embossed film and a plain film are wrapped or coiled while suitably sealed together after which flow members in the form of end caps are applied. The transfer device is formed in a simple wrapping operation and the embossed film may be embossed imediately in advance of the wrapping operation.

3,738,814

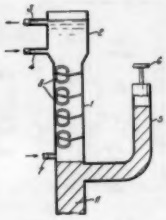
PULSED COUNTERCURRENT LIQUID-SOLIDS CONTACTING APPARATUS

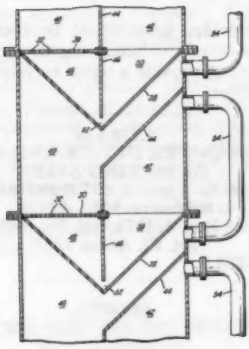
Francis Louis Dirk Cloete and Michael Streat, London, England, assignors to National Research Development Corporation, London, England

Application Oct. 12, 1967, Ser. No. 676,998, which is a continuation-in-part of application Ser. No. 317,180, Oct. 18, 1963. Divided and this application May 8, 1969, Ser. No. 847,752

Int. Cl. B01d *11/04*

U.S. Cl. 23—270 7 Claims





Apparatus for effecting countercurrent continuous liquid/solids contact comprising a stack of interconnected stages through which only liquid is pulsed in one direction and only settled solids are pulsed in the opposite direction after first settling in one of the stages before passing to the next stage. Each stage is connected to the next stage by a conduit which communicates with the below-settled-solids level of one stage and with the above-settled-solids level of the next stage. Each conduit includes a non-descending section which prevents passage of fluidized solids under gravity.

3,738,815

REACTOR FOR REMOVING OLEFINS FROM ACETYLENIC AND OLEFIN-CONTAINING GASEOUS HYDROCARBON MIXTURES

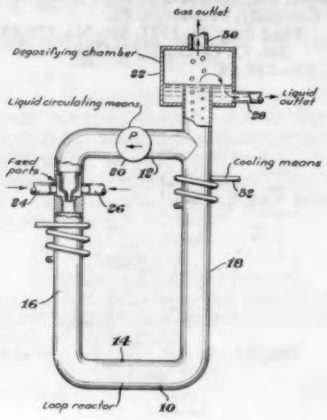
Chester E. Pawloski, Bay City, and Russell L. Stewart, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Original application Dec. 22, 1967, Ser. No. 692,892, now Patent No. 3,562,349. Divided and this application Oct. 9, 1970, Ser. No. 79,710

Int. Cl. B01j *1/00*

U.S. Cl. 23—260 2 Claims

Olefins are substantially removed from an acetylenic and olefin-containing gaseous hydrocarbon mixture by chlorinating said mixture in the presence of the liquid chlorination products of said mixture wherein the temperature is below about 60° C. The process is conducted in a novel reactor comprising a closed tubular loop having feed ports, circulating means, a degasifying chamber



including separate outlet ports for liquid and gas, and cooling means for the loop, and the resulting gaseous product is useful as a welding and cutting gas.

3,738,816

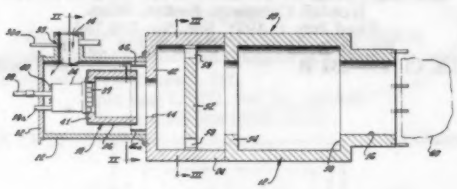
APPARATUS FOR INCINERATION OF COMBUSTIBLE MATERIALS IN A CONTINUOUS FLOW OF A GASEOUS MEDIUM

John H. Hirt, Monterey Park, Calif., assignor to Hirt Combustion Engineers, Montebello, Calif.

Original application Apr. 26, 1968, Ser. No. 724,348, now Patent No. 3,637,343. Divided and this application June 10, 1971, Ser. No. 151,869

Int. Cl. F23d *15/02*; F23m *9/00*

U.S. Cl. 23—277 C 8 Claims



A fume incinerator apparatus for purifying a continuous flow of waste gas that contains combustible material by incinerating such material. The exemplary incinerator includes a chamber, a fuel-operated burner in the chamber, and flow control means for rapidly and thoroughly mixing waste gas and the hot gaseous products from the burner for highly effective and efficient incineration of the combustible material.

3,738,817

WROUGHT DISPERSION STRENGTHENED METALS BY POWDER METALLURGY

John Stanwood Benjamin, Suffern, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.

Application Aug. 27, 1969, Ser. No. 853,413, now abandoned, which is a continuation-in-part of application Ser. No. 709,700, Mar. 1, 1968, now Patent No. 3,591,362. Divided and this application Mar. 5, 1971, Ser. No. 121,551

Int. Cl. B22f *3/00*

U.S. Cl. 29—182.5 10 Claims

This invention relates to the powder metallurgy of wrought, dispersion strengthened metals and also to a

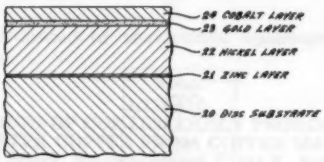
powder metallurgy method for producing wrought dispersion strengthened metal shapes selected from the group consisting of nickel, copper, lower alloy steels, maraging steels, zinc-base metals, columbium-base, tantalum-base and tungsten-base refractory metals, platinum-base metals, and gold-base metals characterized metallographically by a uniform distribution of dispersoids in both the longitudinal and transverse directions.

3,738,818

HIGH RECORDING DENSITY MAGNETIC MEDIA WITH SQUARE B-H LOOP

Eliot Stone and Pravin K. Patel, Los Angeles, Calif., assignors to Control Data Corporation, Minneapolis, Minn.

Filed June 3, 1971, Ser. No. 149,717
Int. Cl. B32b *15/00*
U.S. Cl. 29—194 **10 Claims**



A magnetic recording medium and a method of producing it which permits the production of a magnetic recording medium having a high intrinsic coercivity greater than 300 oersteds and an 0.95 square B-H hysteresis loop permitting high switching speeds and high density recording. The magnetic recording medium comprises an aluminum alloy disc substrate covered by zinc and nickel layers, overlaid by a gold film and thin-film cobalt magnetic layer. The fabrication process involves electroless deposition of thin-film layers of zinc and nickel on the substrate, then the deposition of a one-half micro-inch gold layer covered by a cobalt phosphorus thin-film layer. The method provides for tailoring of the value of coercivity independent of the thickness of the magnetic film layer.

3,738,819

METHOD OF USING COMBUSTION ADJUVANT

Maclin R. Milner, Clearwater, and Frederick B. Johnston, Tampa, Fla., assignors to Trimex Corporation, Clearwater, Fla.

No Drawing. Continuation-in-part of applications Ser. No. 852,867, Aug. 25, 1969, now abandoned, and Ser. No. 11,827, Feb. 16, 1970, now Patent No. 3,628,925. This application Dec. 15, 1971, Ser. No. 208,455
Int. Cl. C10l *9/00, 1/32*
U.S. Cl. 44—4 **3 Claims**

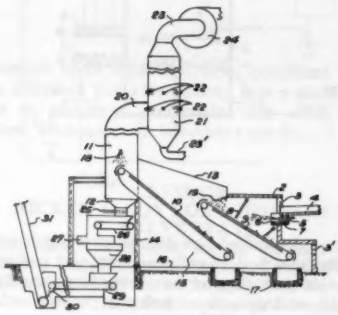
A method of employing an adjuvant for hydrocarbon fuels is provided by adding an adjuvant comprising a calcium based montmorillonite clay, a phosphate, and a source of boron oxide to a hydrocarbon fuel in a combustion zone. A preferred formulation comprises 85 weight percent calcium bentonite, 10 weight percent anhydrous trisodium phosphate, and 5 weight percent sodium borate. The adjuvant is combined with the hydrocarbon fuel or with combustion air in an amount of from about 0.00001 up to less than about 0.1 weight percent, based on the weight of the hydrocarbon fuel. Combustion efficiency is substantially improved and oxidation is substantially more complete, so that combustion products are produced in less noxious forms. In addition, the nature of slag or other deposits upon surfaces in a furnace or combustion chamber are substantially altered, so that corrosive conditions do not occur and the deposition of slag is prevented or materially reduced, and the ash is produced in a soft, friable form.

3,738,820

METHOD OF AND APPARATUS FOR THE PROCESSING OF MOLTEN SLAG

Fred Osborne, Birmingham, Ala., and Selwyne P. Kinney, Carnegie, Pa., assignors to S. P. Kinney Engineers, Inc., Carnegie, Pa.

Filed June 1, 1970, Ser. No. 42,434
Int. Cl. C03b *19/08*
U.S. Cl. 65—19 **9 Claims**



This application discloses an improvement in an apparatus for and method of expanding molten slag such as blast furnace slag by contacting it with water, as shown for example in Pat. No. 2,702,407, granted Feb. 22, 1955. According to this invention, the apparatus for contacting the slag with water and the conveyor for the expanded slag is enclosed. The vapors and gases resulting from this operation are conducted from the enclosure into an outlet duct system comprising a stack. Air flow is induced through the enclosure, and in the environment within the enclosure H_2S is converted into SO_2 and H_2O, and elemental sulphur will also result from the reactions which take place in this enclosure. Most of the solids entrained in the gases settle out of the gases inside the enclosure and are carried out on the conveyor.

The effluent gases from the enclosure are contacted in the outlet duct system with water in the form of a spray, this taking place either in the stack or in a gas washer into which the stack gases flow from the stack. The spray of water dissolves SO_2 and removes entrained solids.

3,738,821

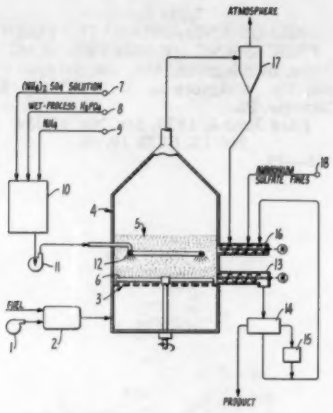
PROCESS OF AGGLOMERATING AMMONIUM SULFATE AND MAKING COMPLETE FERTILIZER

Mack A. Barber, Hanford, Calif., assignor to Reserve Oil and Gas Company, Los Angeles, Calif.

Continuation-in-part of Ser. Nos. 52,754, July 6, 1970, abandoned, and Ser. No. 102,145, Dec. 28, 1970, abandoned. This application May 18, 1972, Ser. No. 254,505
Int. Cl. C05b *7/00*
U.S. Cl. 71—36 **7 Claims**

A method of agglomerating or pelletizing ammonium sulfate for fertilizer and other purposes which includes the addition of a minor amount of ammonium phosphate or equivalent to an aqueous solution of ammonium sulfate and driving off the water to form pellet-sized agglomerates. An aqueous solution of varying quantities of mono-ammonium phosphate, di-ammonium phosphate and ammonium sulfate,

the mono- and di-ammonium phosphate portions being the reaction products of wet-process phosphoric acid and either anhydrons or aqua ammonia, is fed to a fluidized bed dryer-



pelletizer through a drilled pipe distributor which is within or above the fluidized bed of pelleting fertilizer, said solution forming a series of coatings on the seed pellets in the fluidized bed to thus appreciably increase their size.

3,738,822

GIBBERELLIN PREPARATIONS

Yutaka Asahi, Hyogo, and Hideo Nakamachi, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka, Japan

No Drawing. Filed Mar. 28, 1969, Ser. No. 811,653

Int. Cl. A01n *9/12*

U.S. Cl. 71—89 **8 Claims**

The solubility of the gibberellins in aqueous solutions is improved by incorporating at least one member of the group consisting of a neutral amino acid having pKa value of 3 to 5, a salt of an acidic amino acid having a pKa value due to at least one of the carboxyl groups of 3 to 5 and a basic amino acid having pKa value due to at least one of the ammonium groups of 8 to 13. Compositions having growth promoting activity are also provided.

3,738,823

PROCESS OF KILLING UNDESIRED WEEDS

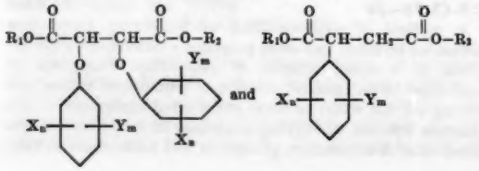
Delta W. Gier, Laurinburg, N.C., and Daniel M. Wasleski, Kansas City, Mo., assignors to Baychem Corporation, New York, N.Y.

No Drawing. Original application Oct. 16, 1967, Ser. No. 675,350, now abandoned. Divided and this application May 22, 1970, Ser. No. 38,649

Int. Cl. A01n *9/24*

U.S. Cl. 71—108 **12 Claims**

Compounds of the formulae



wherein R_1 and R_2 are hydrogen, alkyl, chloroalkyl, phenyl and alkyl phenyl, X is halogen, Y is nitro, *m* is an integer from 1 to 2 and *n* is an integer of 1 to 3 are useful as herbicides and desiccants and to a lesser extent as defoliants. For the best desiccant properties there should be a halogen in the ortho position of the chloronitrophenyl group.

3,738,824

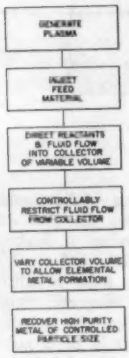
METHOD AND APPARATUS FOR PRODUCTION OF METALLIC POWDERS

Robert D. Davis, Newport Beach, Theodore N. Meyer, Westminster, and Roy L. Blizzard, Huntington Beach, Calif., assignors to Plasmachem, Inc., Newport Beach, Calif.

Filed Mar. 18, 1971, Ser. No. 125,589

Int. Cl. B22f *9/00*; C22b *49/00, 61/00*

U.S. Cl. 75—.5 B **11 Claims**


GENERATE PLASMA
INJECT FEED MATERIAL
DIRECT REACTANTS & FLUID FLOW INTO COLLECTOR OF VARIABLE VOLUME
CONTROLLABLY RESTRICT FLUID FLOW FROM COLLECTOR
VARY COLLECTOR VOLUME TO ALLOW ELEMENTAL METAL FORMATION
RECOVER HIGH PURITY METAL OF CONTROLLED PARTICLE SIZE

In the process of producing elemental metal powders, especially refractory metals, using a plasma reactor, the reactant feed material is introduced into the reaction zone of the reactor and the effluent from the reaction zone is directed into a quenching zone through a selectively variable passageway or orifice in a manner that permits separation of the metal particles from the effluent hot gas stream and continuous collection of the metallic powder in a collection zone wherein the metallic powder is of a selected characteristic, controlled by the maintenance of certain operational parameters, including a selected differential fluid pressure in the collection zone as well as reaction and collection zone temperatures. Apparatus for carrying out the process is also disclosed.

3,738,825

SYSTEM AND METHOD OF ELECTROSLAG REMELTING UTILIZING SLAB-SHAPED ELECTRODES

Boris Izrailevich Medovar, Boulevar Lesy Ukrainky 2, Apt. 8; Yury Vadimovich Latash, ul. Artema 55, Apt. 23; Oleg Petrovich Bondarenko, ul. Khreshchatic 15, Apt. 34; and Alexsey Georgievich Bogachenko, ul. Miljutenko 15/2, Apt. 141, all of Kiev, U.S.S.R.

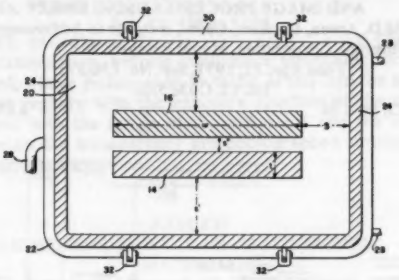
Filed June 3, 1970, Ser. No. 43,092

Int. Cl. C22d *7/08*

U.S. Cl. 75—10 C **31 Claims**

In an electroslag remelting process of the type where two electrodes are immersed in a molten slag bath in a mold

and AC power is applied between the electrodes, a significant power reduction is effected by the use of slab-shaped



electrodes instead of conventional square-cross-section electrodes.

3,738,826
METHOD OF CONTINUOUSLY PRODUCING BLISTER COPPER FROM COPPER MATTE
Axel von Starck, Remscheid, and Franz E. Pawlek, Berlin, Germany, assignors to AEG-Elotherm G.m.b.H., Remscheid-Hasten, Germany
Filed June 1, 1971, Ser. No. 148,348
Claims priority, application Germany, June 4, 1970, P 20 27 452.6
Int. Cl. C22b *15/00*
U.S. Cl. 75—75 **2 Claims**

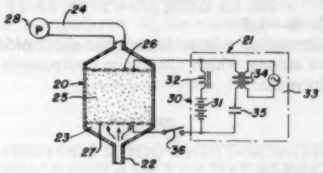
A method of continuously producing blister copper from copper matte in which the matte is conveyed up an ascending refractory trough after introduction into a melting vessel, with siliceous material added in a first section of the trough and oxygen containing gas added in this first and a second following section so that the iron in the matte sulphide reacts with the oxygen in the second section to form copper which collects on the trough floor to be removed at the upper end of the trough.

3,738,827
METHOD FOR ADDING SOLID METAL TO MOLTEN METAL
Michael J. Pryor, Woodbridge, Jacob Crane, Hamden, and Joseph Winter, New Haven, Conn., assignors to Olin Corporation
No Drawing. Filed July 29, 1970, Ser. No. 59,348
Int. Cl. C22b *15/14, 9/10*
U.S. Cl. 75—76 **7 Claims**

The disclosure teaches a method for adding solid metal to molten metal, especially without deleterious reaction with air. The method is characterized by providing the solid metal in rod or wire form clad with a material compatible with the molten metal and feeding the clad material into the molten metal. The disclosure teaches novel composites to achieve this end. The method is particularly useful in deoxidizing molten metal.

3,738,828
METHOD OF POWDER ACTIVATION
Kiyoshi Inoue, 16–8, 3-chome Kamiyoga, Tokyo, Japan
Continuation-in-part of application Ser. No. 692,960, Dec. 22, 1967. This application July 31, 1970, Ser. No. 60,070
Int. Cl. B22f *1/00*
U.S. Cl. 75—211 **16 Claims**

A method for activation of metallic powders by subjecting the powder to bombardment with electrons, ions, or molecules in an inert or reductive atmosphere. Improved densities result in sintering, as do improved catalytic actions. Simultaneous pulverization of coarse particles or bodies is also achieved where desired. The

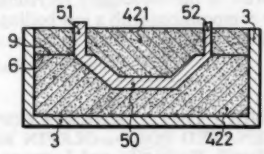


pretreatment is, in some instances, combined with loading the activated particles directly into a mold, for compaction or sintering, preferably with some additional activation, all done in an integrated system.

3,738,829
NICKEL ALLOY FOR AUTOMOTIVE VALVE SEATS
Yoshihito Sato, Kawaguchi, Japan, assignor to Nippon Piston Ring Kabushiki Kaisha, Tokyo, Japan
No Drawing. Filed June 15, 1971, Ser. No. 153,404
Claims priority, application Japan, June 22, 1970, 45/54,175
Int. Cl. C22c *19/00*
U.S. Cl. 75—170 **4 Claims**

Exhaust valve seats of an alloy differing from S-Monel by small amounts of carbon and/or lead dispersed in the base component in the form of a separate phase have a much longer useful life in automotive engines fueled with lead-free gasoline.

3,738,830
METHOD FOR PRODUCING A METAL DIE OR MOLD
Takashi Kimura, Yoshihiko Abe, and Hiroshi Hamamoto, Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, Japan
Filed June 26, 1970, Ser. No. 50,219
Claims priority, application Japan, July 7, 1969, 44/53,577
Int. Cl. B22f *1/00*
U.S. Cl. 75—214 **3 Claims**



A method for producing a metal die or mold including the steps of placing a pattern, corresponding in configuration to that of the cavity surface of a desired die, in a frame, or box, filling the frame with a sintering powder such as iron, copper, iron and graphite, or mixtures thereof, and heating the powder together with the pattern in the frame to sintering temperature, whereby to form a die complementing the pattern in the configuration.

3,738,831

CHALCOGEN ORGANIC COMPOUNDS USED IN ELECTROPHOTOGRAPHIC PLATES AND PROCESSES

Wolfgang H. H. Gunther, 585 Bending Bough Drive, Webster, N.Y. 14580

Original application July 30, 1970, Ser. No. 59,495, now Patent No. 3,674,467. Divided and this application Dec. 20, 1971, Ser. No. 210,274

Int. Cl. G03g 5/04, 5/06, 13/22

U.S. Cl. 96—1.5 19 Claims

This invention relates to organic diselenides and polyselenides among which are cyclic compounds represented by the formula:

(I)

wherein R is selected from divalent hydrocarbylene radicals of 5 to 20 carbon atoms, divalent heterocyclic, alicyclic and aromatic radicals having from 3 to 50 carbon atoms, *n* is a positive integer and X is the radical

—Se—R—Se—

linear polymers having a repeating unit represented by the formula:

(II) $\{Se—A—Se\}$

wherein A is selected from divalent alkylene radicals having from 9 to 20 carbon atoms, divalent aromatic radicals from 6 to 50 carbon atoms and divalent heterocyclic radicals and polymers having a repeating unit represented by the formula:

(III) $\{B—Se_a\}_b$

wherein B is selected from the group consisting of divalent, hydrocarbylene radicals and divalent heterocyclic radicals, *a* is a positive integer of at least 3 and *b* is a positive integer greater than 1. This invention also relates to the use of these compounds in the production of electrophotographic plates.

3,738,832

COLOR ELECTROPHOTOGRAPHIC PROCESS EMPLOYING LIQUID DEVELOPER CONTAINING GELATIN

Seiji Matsumoto, Yasuo Tamai, and Takao Komaki, Asaka, Japan, assignors to Xerox Corporation, Stamford, Conn.

No Drawing. Filed July 9, 1970, Ser. No. 53,631

Int. Cl. G03g 13/10, 9/04

U.S. Cl. 96—1.2 8 Claims

There is disclosed a color electrophotographic imaging process utilizing a liquid developer composition containing a gelatin additive so as to enhance the properties of the resulting color image in a direct or combination color imaging process. It is further disclosed that upon cleaning each image prior to the subsequent recycling utilizing additional color compositions with a low boiling point solvent that the qualities of the resulting image may be further enhanced.

3,738,833

PHOTOCONDUCTIVE ELEMENTS CONTAINING HALOGENATED POLY-α-OLEFIN BINDERS

Stewart H. Merrill, Rochester, and Lawrence E. Contois, Webster, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 812,446, Apr. 1, 1969, which is a continuation-in-part of application Ser. No. 755,716, Aug. 27, 1968, now Patent No. 3,652,269. This application July 20, 1971, Ser. No. 164,444

Int. Cl. G03g 5/04, 5/06

U.S. Cl. 96—1.6 12 Claims

Photoconductive elements containing a photoconductor and a binder comprising polymers of halogenated poly-α-olefins are described. These elements can be sensitized and charged either negatively or positively.

3,738,834

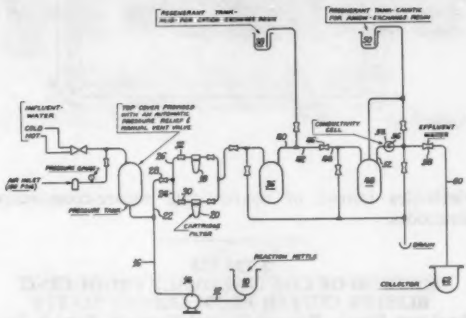
METHOD OF PREPARING SILVER HALIDE EMULSIONS AND IMAGE PROCESSES USING SAME

Ronald D. Arena, Durham, Conn., assignor to Addressograph-Multigraph Corporation, Mount Prospect, Ill.

Filed Apr. 22, 1971, Ser. No. 136,571

Int. Cl. G03c 5/00

U.S. Cl. 96—36 6 Claims



Method of purifying an aqueous emulsion containing a silver halide suspended therein and using same in an imaging process which comprises contacting said emulsion with a first ion-exchange material which provides one of the ions selected from the class consisting of hydrogen ions and hydroxyl ions and with a second ion-exchange material which provides the opposite ion from that provided by said first ion-exchange material, the time of contact of said emulsion with each of said ion-exchange materials being sufficient to exchange substantially all of the ions in said emulsion for hydrogen and hydroxyl ions, and then separating the emulsion from said ion-exchange materials. The emulsion is applied to a base support exposed to actinic radiation to selectively harden a portion of the surface and then washing away the unhardened layer.

3,738,835

ELECTROPHORETIC PHOTORESIST COMPOSITION AND A METHOD OF FORMING ETCH RESISTANT MASKS

Peter Bakos, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of abandoned application Ser. No. 887,704, Dec. 23, 1969. This application Oct. 21, 1971, Ser. No. 191,559

Int. Cl. G03c 1/68, 5/00

U.S. Cl. 96—36 10 Claims

A photoresist composition which can be uniformly deposited on a metal substrate by electrophoresis is provided. The electrophoretic photoresist composition is an emulsion prepared from a first solution containing a polychloroprene material, a sensitizer, a stabilizer and a polymeric resin binder and a second solution containing a wetting agent, surfactants, N-methyl-2-pyrrolidone and triethanol amine. The emulsion is formed by the dropwise addition of the second solution into the first solution while agitating the same. A method for preparing fine line structures using the above composition is also provided.

The high resolution photoresist composition of this invention is used in the manufacture of semiconductor devices such as, diodes, transistors, and microelectronic blocks where very fine lines of 1 micron thickness or less are required. The composition can also be used to electrophoretically coat irregularly shaped articles requiring uniformity of coating.

3,738,836

PROCESS OF MAKING IDENTIFICATION CARDS

Robert L. Dalton, Pittsford, N.Y., assignor to R. D. Products, Inc., East Rochester, N.Y.

Original application July 17, 1967, Ser. No. 653,808. Divided and this application Dec. 14, 1970, Ser. No. 97,781

Int. Cl. G03c *5/04*

U.S. Cl. 96—43 2 Claims

A transparency, bearing intelligence identifying the individual, whose picture is to be taken, is slid into the camera into registry with the exposure aperture of the camera, and both the image of the individual and the intelligence on the transparency are photographed simultaneously on the film frame.

3,738,837

LIGHT-SENSITIVE COLOR PHOTOGRAPHIC MATERIAL

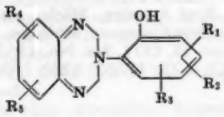
Yoshimi Kuwabara, Koganei-shi, Tokyo; Shunji Matsuo, Nishitama-gun, Tokyo; Hidehiko Ishikawa, Odawara-shi, Kanagawa-ken, and Mikio Sato, Odawara-shi, Kanagawa-ken, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 889,298, Dec. 30, 1969, abandoned. This application May 23, 1972, Ser. No. 256,011

Int. Cl. G03c *1/84*

U.S. Cl. 96—84 R 5 Claims

A light-sensitive silver halide color photographic material comprising one or more layers. At least one layer constituting the photographic material contains a dispersion in a difficulty water-soluble high boiling organic solvent, either singly or in admixture with a low boiling organic solvent, of two or more compounds represented by the general formula



wherein R_1, R_2 and R_3 are individually a hydrogen or halogen atom or a cycloalkyl, alkoxy, aryl, carbalkoxy or alkylsulfone group having one to six carbon atoms and at least one of the groups R_1, R_2 and R_3 is not hydrogen; R_4 and R_5 are individually a hydrogen or halogen atom or an alkyl, cycloakyl, alkoxy, aryl, carbalkoxy or alkylsulfone group having one to six carbon atoms; and the sum of the carbon atoms of R_1, R_2 and R_3 is 8 or less, provided that in case the sum of the carbon atoms of R_1 R_2 and R_3 is 8, each of R_1, R_2 and R_3 has less than four carbon atoms.

3,738,838

SUBLAYER FOR PHOTOGRAPHIC POLYESTER FILM BASE

Yuzo Ando and Motoo Kogure, Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd.

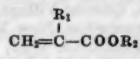
No Drawing. Filed Sept. 10, 1968, Ser. No. 758,696

Claims priority, application Japan, Sept. 19, 1967, 42/59,603

Int. Cl. G03c *1/78*

U.S. Cl. 96—87 2 Claims

A sublayer for a photographic polyester film base, which comprises a homopolymer of a monomer of the general formula



in which R_1 stands for hydrogen, methyl or chlorine, and R_2 for a chlorinated alkyl, or methyl or ethyl, when R_1 is chlorine, or a copolymer of the monomer with other polymerizable ethylenically unsaturated compound.

3,738,839

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS FOR A SILVER DYE BLEACHING PROCESS

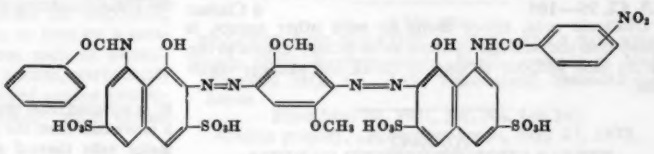
Makoto Yoshida, Shinichi Imai, and Juniti Tamano, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 19, 1970, Ser. No. 82,033

Int. Cl. G03c *1/10*

U.S. Cl. 96—99 6 Claims

A color photographic light-sensitive material for a silver dye bleaching process comprising a support having thereon a photographic emulsion layer containing a cyan dye represented by the following general formula:



wherein said nitro group is at the para- or meta-position of the benzoyl nucleus and method for preparing same is disclosed.

3,738,840

COLOUR COUPLERS

Brian Anderson, Bury, England, assignor to Ilford Limited, Ilford, England

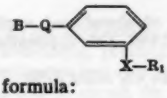
Filed Apr. 14, 1970, Ser. No. 28,422

Claims priority, application Great Britain, Apr. 18, 1969, 20,003/69

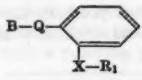
Int. Cl. G03c *1/40*

U.S. Cl. 96—100 1 Claim

This application describes a colour coupler selected from the class consisting of compounds of the general formula:



and of the general formula:



wherein in the above two formulae B represents a colour coupler residue, Q is a group containing an alkali solubilising radical, R_1 is an alkyl group containing at least 12 carbon atoms and X is a direct link or —O—,

—CONH—

—SO_2— or —SO_2NH—, corresponding compounds in which there is a linking group between B and Q and corresponding compounds in which there is a linking group between Q and the phenyl group.

3,738,841
SUGAR SYRUP FOR BREAD DOUGH PREPARATION

Vincent A. Toscano, Queens Village, N.Y., assignor to Amstar Corporation, New York, N.Y.

No Drawing. Filed Aug. 13, 1971, Ser. No. 171,483
Int. Cl. A21d 2/18
U.S. Cl. 99—90 R 9 Claims

An improved bread dough is prepared by incorporating in the dough along with other bread dough-making ingredients a syrup consisting essentially of sucrose and invert sugar (dextrose and levulose) as the only dissolved sugars. A suitable syrup would contain about 76.5% by weight dissolved sugars, the dissolved sugars being made up of about 50% by weight sucrose, about 25% by weight dextrose and about 25% by weight levulose. An especially useful syrup would also contain dissolved therein water-soluble autolyzed brewer's yeast in an amount in the range from about 25 parts per million to about 500 parts per million based on the weight of said syrup.

3,738,842
PROCESS FOR PREPARING CURED SAUSAGES

Paul A. Hammes, Westfield, Charles W. Everson, Warren, and Wilson E. Danner, Linden, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of application Ser. No. 200,639, Nov. 30, 1971, which is a continuation-in-part of application Ser. No. 858,171, Sept. 15, 1969, now abandoned. This application Feb. 17, 1972, Ser. No. 227,244
Int. Cl. A22c 11/00; A23b 1/02; A23l 3/34
U.S. Cl. 99—109 4 Claims

Glutamic acid, either alone or with other agents, is added into the sausage mixture as its acidity assists in the curing step without serving to break the sausage emulsion.

3,738,843
PREPARATION OF COOKED CANDIES

Robert R. Frey, Huntingdon Valley, Pa., assignor to Richardson-Merrell Inc., New York, N.Y.

No Drawing. Filed Mar. 30, 1971, Ser. No. 129,569
Int. Cl. A23g 3/00
U.S. Cl. 99—134 R 2 Claims

The gumminess of cooked candies made with arabinogalactan can be reduced by incorporating small amounts of mannitol and/or lactose in the aqueous solution before or during the cooking period.

3,738,844
CONFECTIONS CONTAINING LOW-ASH DEMINERALIZED WHEY SOLIDS

Kenneth E. Rash, Jr., Pleasanton, John C. Colmey, Diablo, and Charles E. Zanzig, Danville, Calif., assignors to Foremost-McKesson, Inc., San Francisco, Calif.

Continuation-in-part of abandoned application Ser. No. 807,280, Mar. 14, 1969. This application June 10, 1971, Ser. No. 151,685
Int. Cl. A23g 3/00
U.S. Cl. 99—134 R 6 Claims

Confection mixes and products having all or part of the milk solids replaced with low ash content-electrodialyzed whey solids.

3,738,845
PROCESS FOR THE MANUFACTURE OF SUGARLESS CONFECTIONS

Jerome T. Liebrand, Farmingdale, N.Y., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Filed Jan. 7, 1972, Ser. No. 216,229
Int. Cl. A23g 3/00
U.S. Cl. 99—134 R 4 Claims

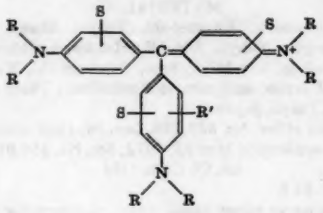
A process for the preparation of clear sorbitol hard candies is described which prevents the crystallization of sorbitol by the addition of an organic acid, such as citric acid, prior to the completion of the cooking step.

3,738,846
FOGGED DIRECT POSITIVE SILVER HALIDE EMULSION CONTAINING A SULFONATED TRIPHENYLMETHANE DYE

Hideo Kamano; Hirotetu Kato; Teruo Kobayashi, and Kazuo Inoue, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

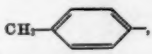
Filed Apr. 14, 1971, Ser. No. 134,046
Claims priority, application Japan, Apr. 14, 1970, 45/31854
Int. Cl. G03c 1/08
U.S. Cl. 96—139 7 Claims

A direct positive photographic silver halide material containing in a silver halide emulsion layer and/or its adjacent layer a compound represented by the following general formula (I)



(I)

in which R may be the same or different and is selected from the group consisting of H, CH_3, C_2H_5, and



R' is selected from the group consisting of H, CH_3 and Cl, and S is selected from the group consisting of SO_3H, and the alkali metal salts thereof and the ammonium salt thereof, and wherein the number of S substituents ranges from 1 to 3, is disclosed.

3,738,847
PROCESS FOR PRODUCING A CANNED EGG IN MEAT PET FOOD

Peter J. Bechtel, East Lansing, Mich., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Apr. 23, 1971, Ser. No. 136,754
Int. Cl. A22c 18/00; A23b 1/00
U.S. Cl. 99—187 1 Claim

A process is disclosed for producing an egg in meat pet food wherein a container is partially filled with a ground meat mixture, a tube is inserted into the ground meat mixture, an egg mixture is passed through the tube until the container is filled while at all times maintaining a layer of ground meat mixture between the egg mixture and the container, removing the tube from the container, sealing the container, and heating the sealed container to sterilize the ground meat mixture and egg mixture.

A new product is described comprising in combination a center core of a sterilized egg mixture, a surrounding

medium of a sterilized ground meat mixture which completely surrounds the sterilized egg mixture and a container which contains the ground meat mixture and which is hermetically sealed.

3,738,848
PROCESS FOR PRODUCING A DRIED SPLIT PEA OR DRIED LENTIL PRODUCT
Fred Mader, Route 1, Palouse, Wash.
Continuation-in-part of Ser. No. 781,971, Dec. 6, 1968, abandoned. This application Aug. 18, 1971, Ser. No. 172,887
Int. Cl. A23b 7/02
U.S. Cl. 99—204 3 Claims

A crisp nutrient food product is obtained from dried split peas or lentils by soaking the split peas or lentils in water without cooking to soften and evenly partially expand the cellular structure with little or no carbohydrate loss and cooking of the split peas or lentils in a cooking oil at a high temperature of between 375° F. and 425° F. for a brief period of time less than three minutes to fully expand, thermally set and cook the split peas or lentils. As a final step, seasoning can be applied to the cooked product.

3,738,849
CHEMICAL PLATING SOLUTIONS
Harold Edward Bellis, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Dec. 22, 1971, Ser. No. 211,043
Int. Cl. C23c 3/02
U.S. Cl. 106—1 16 Claims

An aqueous chemical plating solution for depositing a metal such as nickel, cobalt, copper or iron on a catalytic substrate, using a reducing agent such as formaldehyde, sodium hypophosphite or a borane, particularly an alkali metal borohydride, is stabilized against decomposition by containing therein an alkali metal cyanoborohydride.

3,738,850
LITHOGRAPHIC PLATE DESENSITIZER FORMULATIONS
Eugene A. Radell, Frederick J. Rauner, and James F. Houle, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 137,612, Apr. 26, 1971. This application Oct. 4, 1971, Ser. No. 186,396
Int. Cl. C09d 5/20; C09k 3/00, 3/18
U.S. Cl. 106—2 8 Claims

Lithographic plate desensitizer formulations based on hydrophilic colloids are improved by the addition of dialdehydes, and molybdate ions.

3,738,851
WAX EMULSION
William Harding Jarvis, Coleford, England, assignor to Ragosine Oil Company Limited, London, England
No Drawing. Filed Apr. 6, 1971, Ser. No. 131,787
Claims priority, application Great Britain, Apr. 6, 1970, 16,232/70
Int. Cl. C09d 5/08
U.S. Cl. 106—14 11 Claims

An emulsion containing an aqueous continuous phase, a normally solid wax in the disperse phase, an emulsifying agent and a corrosion inhibitor has been found to be useful for coating the inside of containers in order to prevent deterioration of sensitive materials, such as latex, stored or transported in such containers. The emulsion may also be used to coat the stanchions holding motor cars and the like during their spraying; this enables any paint inadvertently sprayed on the stanchions to be readily stripped off. Furthermore, the emulsion-deposited coating can easily be removed by a non-acidic wash.

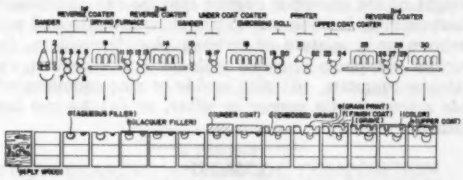
3,738,852
CATIONIC BITUMINOUS EMULSION
Tadashi Doi, Shunzo Ohtsuka, and Sumio Arai, Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan
No Drawing. Continuation-in-part of application Ser. No. 744,700, July 15, 1968. This application May 17, 1971, Ser. No. 144,329
Claims priority, application Japan, July 19, 1967, 42/46,473
Int. Cl. C08h 13/00; C08k 1/622; C09d 3/24
U.S. Cl. 106—277 5 Claims

An asphalt-in-water emulsion in which there is an emulsifier comprised of a mixture of a water-soluble salt of a monoamine having a long chain alkyl or alkenyl group of 8 to 22 carbon atoms and a water-soluble salt of a triamine having a long chain alkyl or alkenyl group of 8 to 12 carbon atoms.

3,738,853
ARTICLES PRODUCED BY CASTING OF SULFUR ASPHALT
Olaf Kopvillem and James W. MacLean, Burlington, Ontario, Canada, assignors to Shell Oil Company, New York, N.Y.
No Drawing. Filed Oct. 5, 1971, Ser. No. 186,820
Int. Cl. C08h 13/00; C09d 3/24
U.S. Cl. 106—274 4 Claims

Sulfur-asphalt pavements and construction articles are produced by casting sulfur-asphalt-aggregate mixes in forms without the application of densification pressure. The mixes employed to produce the cast articles have weight ratios of sulfur to asphalt of at least 1:1.

3,738,854
PROCESS FOR MAKING DECORATIVE BOARDS
Yumio Oishi, Kanbara-machi, Japan, assignor to Noda Plywood Mfg. Co., Ltd., Shimizu-shi, Shizuoka-ken, Japan
Filed May 24, 1971, Ser. No. 146,246
Claims priority, application Japan, May 27, 1970, 45/45,420
Int. Cl. B44d 1/14, 1/28
U.S. Cl. 117—8 7 Claims

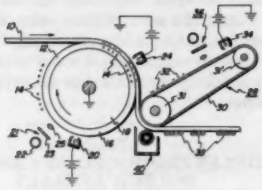


Decorative panels are obtained by applying a base-color undercoat, then embossing, printing pattern, applying a transparent or semitransparent coat, heating to obtain only incomplete drying and to shrink the cavities produced in the embossing step, applying a semi-transparent color paint which is incompatible with the coat previously applied, filling the cavities with a coloring paint and drying.

3,738,855
INDUCTION IMAGING SYSTEM
Robert W. Gundlach, Victor, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 21, 1970, Ser. No. 99,886
Int. Cl. G03g 13/08
U.S. Cl. 117—17.5 30 Claims

A method for simultaneously forming a plurality of visible powder images on a receiving member is described. The method comprises bringing a substantially humidity

insensitive receiving member having controlled conductivity characteristics into contact with a first imaging member bearing an electrostatic charge pattern so as to induce a latent electrostatic image in the receiving member, separating the latter from the first imaging member while contacting the receiving member with a second imaging member bearing an electrostatic charge pattern and subsequently applying electroscopic marking material to the receiving member while it is in contact with the second imaging member or immediately after separation therefrom thus simultaneously forming a plurality of visible powder images on the receiving member. The developed powder images may be fixed to the receiving member or transferred to a final copy sheet and fixed thereon.

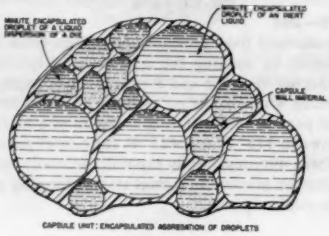


3,738,856
X-RAY CONVERSION SCREEN UTILIZING YTTRIUM OXYSULFIDE PHOSPHOR
Frank Masi, Morristown, N.J., assignor to United States Radium Corporation, Morristown, N.J.
No Drawing. Filed Jan. 11, 1972, Ser. No. 216,966
Int. Cl. C09k *1/36*; H01j *1/63*
U.S. Cl. 117—33.5 C **11 Claims**

An X-ray conversion screen comprises a substrate sheet having on a surface thereof a phosphor coating consisting essentially of at least 5% by weight of yttrium oxysulfide activated wtih from 0.1% to 10% by weight of terbium or a mixture of terbium plus dysprosium. Up to 95% by weight of the phosphor coating may be (a) gadolinium, lanthanum or lutetium oxysulfide phosphor activated with terbium or a mixture of terbium plus dysprosium, (b) barium phosphate activated with divalent europium, (c) calcium tungstate, (d) zinc sulfide or zinc cadmium sulfide activated with copper or silver, or (e) barium lead sulfate.

3,738,857
PRESSURE-SENSITIVE RECORD SHEET AND METHOD OF MAKING
Bruce W. Brockett, Dayton, and Fredrick D. Weaver, Trotwood, Ohio, assignors to The National Cash Register Company, Dayton, Ohio
Original application Nov. 8, 1968, Ser. No. 774,312, now abandoned. Divided and this application Nov. 9, 1970, Ser. No. 88,137
The portion of the term of the patent subsequent to Nov. 2, 1988, has been disclaimed
Int. Cl. B41m *5/10, 5/22*
U.S. Cl. 117—36.1 **2 Claims**

There is provided by this invention a minute, multiple-droplet-retaining pressure-rupturable capsule unit for supplying marking liquid, the use of which in a paper coating constitutes a new method of aiding in the protection of minute capsules against accidental rupture and loss of marking liquid until marking pressures are applied. The capsule unit comprises a bounding and retaining matrix of deposited polymer film material in which the droplets are retained in random distribution, the droplets being of two kinds, differing in size and material. The droplets of smaller size are of concentrated liquid marking material, whereas the larger droplets are of a diluent for the liquid of the smaller capsules, so, that, when a capsule is smashed in its entirety, it releases a low-viscosity diluted marking liquid that quickly dries on paper by evaporation and by imbibition. The larger retained droplets protrude and cause bumps in the deposited matrix. When the units are used as a coating on record sheet material in close juxtaposition, as dried from an applied liquid coating slurry of the units, the protuberances of the large droplets protect the smaller droplets from accidental pressure-release by scuffing types of casually-applied handling forces. Thus a sheet of paper sensitized to direct printing presure with a coating of these capsule units for use as part of a record unit system shows both excellent marking-liquid transfer efficiency and accidental-smudge resistance—a marked improvement over present commercial papers coated with capsular aggregates having droplets of uniform size and composition.



3,738,858
METHOD OF PRODUCING LOW-SCATTER SURFACES ON METAL SUBSTRATES
Robert M. Elwell, Merrimac, Jurgen M. Kruse, Lincoln, and Leon Michelove, Lexington, Mass., assignors to Itek Corporation, Lexington, Mass.
No Drawing. Filed Feb. 3, 1972, Ser. No. 223,332
Int. Cl. B44d *1/44*; C23c *3/00*
U.S. Cl. 117—64 R **8 Claims**

A method for producing low-scatter or ultrasmooth surfaces of metal substrates is disclosed. The method comprises contacting and polishing the metal substrate in the presence of both a source of the metal in a zero-valent or latent zero-valent state and a source of the metal in an ionic state. The metal substrate is preferably polished with a soft, smooth, resilient cloth. Low-scatter surfaces are useful on certain optical components including mirrors.

3,738,859
CONVEYOR BELTING
Arthur Ernest Anderson, Hull, Michael John Roberts, Thorngumbald, near Hull, and Peter John Wright, Hull, England, assignors to J. H. Fenner & Co. Limited, Marfleet, Hull, England
No Drawing. Filed Feb. 3, 1971, Ser. No. 112,435
Claims priority, application Great Britain, Feb. 5, 1970, 5,471/70
Int. Cl. F16g *1/04*
U.S. Cl. 117—76 T **4 Claims**

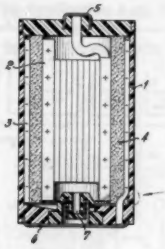
Conveyor belting comprising a textile carcass impregnated with polyvinyl chloride, an inner layer of polyvinyl chloride or other thermoplastics material covering the impregnated textile carass and an outer layer of a natural or synthetic rubber covering the inner layer, the rubber being so compounded that under the action of heat generated by friction at the outer surface of the belt, the rubber layer becomes detached from the textile carcass.

3,738,860

CELL OR BATTERY HOUSING OF SYNTHETIC RESIN FOR MAINTENANCE FREE BATTERIES

Eckart von Roda, Diekholzen, and Ewald Trankle, Backnang, Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Mar. 5, 1971, Ser. No. 121,402
Claims priority, application Germany, May 26, 1970, P 20 25 631.9
Int. Cl. B44d *1/02*
U.S. Cl. 117—95 9 Claims



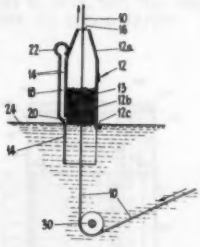
For housing a cell or battery, where a maintenance-free lifetime of at least three years is desired and the housing should be of synthetic resin, the water transmission rate of the material of which the housing is constructed—when measured at 20° C. of a film 40 microns thick with a relative humidity at 85% on one side of the film and 0% on the other—must not exceed 10 gm.$^{-2}$d.$^{-1}$, and preferably should not exceed 3 gm.$^{-2}$d.$^{-1}$. The housing may consist of two layers, one of which has a low water-transmission rate and the other of which has a high resistance to mechanical stress.

3,738,861

METHOD OF WIPING GALVANISED WIRE OR STRIP

Jack Pryor Sciffer, New Lambton, New South Wales, and Harrie Roxby, Kotara South, New South Wales, Australia, assignors to Australian Wire Industries Pty. Ltd., Melbourne, Victoria, Australia

Filed Mar. 7, 1969, Ser. No. 805,145
Claims priority, application Australia, Mar. 8, 1968, 34,755/68
Int. Cl. B05c *11/02;* C23c *1/02*
U.S. Cl. 117—102 M 2 Claims



The invention relates to the operation of wiping galvanised wires or strips immediately after they are withdrawn from the galvanising bath.

For this purpose, the wires or strips are drawn upwardly through a bed of washed and graded river gravel or of nodules or like bodies composed of other suitable inert material having a specific gravity lower than that of molten zinc.

The bed is preferably contained within a chamber which is open at its upper and lower ends and the latter preferably projects into the molten zinc bath.

The interstices of the bed and the space immediately above it are filled with a non-oxidising gas which excludes air and this gas preferably contains H_2S. This gas enters the chamber close to the surface of the molten metal and is preferably preheated by heat exchange from the interior of the chamber before it enters the latter.

It is found that a wiping bed according to the invention, requires replacement less frequently than the conventional charcoal bed so that labour costs are reduced and also that the throughput speeds of the wires or strips may be substantially increased.

3,738,862

PROCESS FOR PREPARING REINFORCED LAMINATES IN SITU WITH EPOXY-POLYHYDRIC PHENOL CONDENSATES

John M. Klarquist, Paul D. Jones, and Lawrence C. Reilly, Cherry Hill, N.J., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Original application Feb. 24, 1970, Ser. No. 13,786, now abandoned. Divided and this application Nov. 8, 1971, Ser. No. 198,023
Int. Cl. C08g *30/14*
U.S. Cl. 117—126 GE 11 Claims

Laminates, particularly glass reinforced electrical laminates, are prepared in situ by impregnating a glass cloth with a varnish comprising (1) an epoxy resin containing an organic phosphine or a phosphonium halide, (2) a phenol, (3) a solvent, (4) an epoxy curing agent, and optionally (5) an accelerator.

3,738,863

INORGANIC REFRACTORY LIQUID COMPOSITION

Suezo Sugaike and Masayuki Watanabe, Tokyo, and Tomitaro Kubo, Kanagawa-ken, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

No Drawing. Filed July 9, 1971, Ser. No. 161,928
Claims priority, application Japan, July 10, 1970, 45/59,844
Int. Cl. C23c *3/00;* B44d *1/34*
U.S. Cl. 117—127 7 Claims

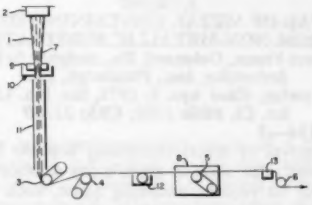
The present invention provides (i) inorganic refractory liquid compositions comprising a metal nitride and potassium salts of phosphoric acid as main constituents, and (ii) a method of forming a phosphate of said metal by the reaction of said compositions at temperatures below 150° C.

3,738,864

FIBER BEARING ANTISTATIC COMPOSITION

Karl Altau, Waynesboro, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 26, 1971, Ser. No. 137,515
Int. Cl. B32b *27/02;* C09j *3/16*
U.S. Cl. 117—138.8 F 13 Claims



Polyamide or polyester fiber bearing the reaction product of a polyoxypropylene diamine and a polyepoxide

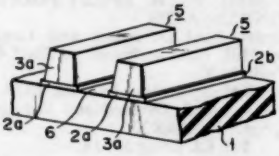
substantially free from ethyleneoxy groups provides a durable antistatic agent which attracts brighteners during washing but does not attract dirt typically retained in dry cleaning solvents during dry cleaning.

3,738,865

METHOD FOR MANUFACTURING A MAGNETIC THIN FILM MEMORY ELEMENT

Syozo Takeno, Yokohama, Mitsuhiko Tashiro, Tokyo, and Akira Kasai, Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed July 30, 1970, Ser. No. 59,537
Claims priority, application Japan, July 31, 1969, 44/60,303
Int. Cl. B44d *1/18;* H01l *7/00*
U.S. Cl. 117—212 7 Claims



A magnetic thin film memory is formed by simultaneously etching a first magnetic thin film and a conductor film both successively integrated on a flat substrate as far as to the surface of the substrate thereby to form integrated strips comprised of equally spaced magnetic and conductive strips, selectively etching the conductive strips by an etchant capable of etching only the conductive strips in such a manner that their widths become less than the widths of the magnetic strips, and entirely covering, after removal of the photo-resist, each of the conductive strips with a magnetic thin film to form a closed flux path with said first magnetic thin film.

3,738,866

FLAME RESISTANT POLYOLEFIN COMPOSITION AND ARTICLE FORMED THEREOF

Stanton C. Martens, New Haven, Conn., assignor to General Electric Company

No Drawing. Continuation of application Ser. No. 805,955, Feb. 20, 1969. This application Aug. 19, 1970, Ser. No. 65,245
Int. Cl. H01b *7/00, 3/30*
U.S. Cl. 117—232 9 Claims

This invention relates to an insulated wire or cable characterized by a high degree of flame resistance. The conductor of the wire or cable is insulated with a cured product comprising a blend consisting essentially of an unchlorinated polyolefin and a chlorinated polyolefin, the unchlorinated polyolefin being present in a range of about 30 percent to 55 percent by weight and the chlorine in a range of about 20 percent to 35 percent by weight of the blend, a chlorinated polyolefin stabilizer and an organic peroxide.

3,738,867

REMOVAL OF METAL CONTAINING DEPOSITS FROM NON-METALLIC SUBSTRATES

Helmut Franz, Oakmont, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Apr. 1, 1971, Ser. No. 130,468
Int. Cl. B08b *3/08;* C03c *23/00*
U.S. Cl. 134—2 4 Claims

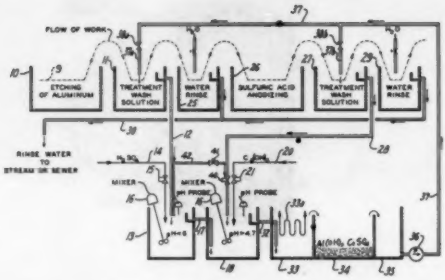
The removal of metal containing deposits from non-metallic substrates, such as glass, using solutions containing 0.05 to 10 percent oxidizing agent, such as hydrogen peroxide, sodium perborate, sodium persulfate, potassium persulfate/ammonium persulfate or the like. The resulting metal containing spent solution is easily treated to yield an essentially non-polluting effluent.

3,738,868

WASTE TREATMENT OF ALUMINUM CONTAINING SOLUTIONS

Leslie E. Lancy, Ellwood City, Pa., assignor to Lancy Laboratories Inc., Zelienople, Pa.

Continuation of abandoned application Ser. No. 8,173, Feb. 3, 1970. This application Jan. 7, 1972, Ser. No. 216,285
Int. Cl. B01d *21/01*
U.S. Cl. 134—13 19 Claims



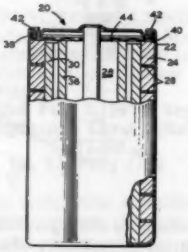
The yield of dry solid content of sludge is greatly increased in proportion to the quantity of flocculent material by taking off dissolved aluminum containing wash water solutions from an aluminum processing line, reconditioning and returning the solutions as aqueous wash solutions to the line and reusing them in the line, and treating and neutralizing the taken off solutions to settle and periodically remove sludge therefrom. The economy of the operation and yield of the dry solids content in the the sludge is further enhanced by providing a relatively low acid pH before neutralization of alkaline waste, by combining acid and caustic solutions for treatment, and by the application of heat.

3,738,869

ELECTRIC CELL WITH DEPOLARIZER COMPENSATED AGAINST CURRENT EROSION EFFECTS

John F. Zaleski, Pleasantville, N.Y., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

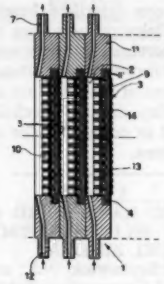
Filed May 25, 1972, Ser. No. 256,833
Int. Cl. H01m *21/00*
U.S. Cl. 136—14 15 Claims



An electric cell having a depolarizer structure of stacked pellets, with intermediate metal elements serving to electrically connect the respective pellets to an associated elec-

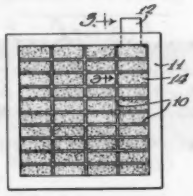
troconductive support, with the stacked pellets under compression, whereby the pellets are maintained electrically active irrespective of erosive structural deformation and loss of direct electrical contact with the supporting electrode.

3,738,870
STORAGE BATTERIES CONTAINING ZINC HALIDE IN AN AQUEOUS SOLUTION OF THE TYPE HAVING A SOLUBLE CATHODE AND A DISSOLVED ANODE
Mario De Rossi, Rome, Italy, assignor to Consiglio Nazionale Delle Ricerche, Rome, Italy
Continuation-in-part of Ser. No. 856,408, Aug. 9, 1969, Pat. No. 3,625,764. This application Aug. 11, 1971, Ser. No. 170,697
Int. Cl. H01m *41/00*
U.S. Cl. 136—22 **10 Claims**



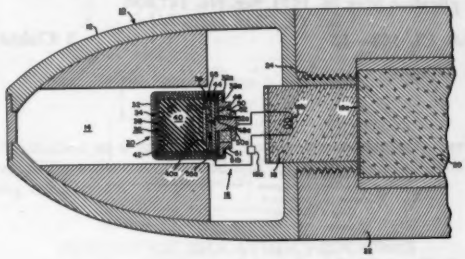
An improved reversible electric cell of the type which includes a soluble metal cathode, a chemically non-reactive electrode and an electrolyte comprising an aqueous solution of a metal halide is disclosed. The electrode is provided with open channels or grooves in which a dispersion, of paste-like consistency, is disposed. The dispersion or mixture comprises an inert conducting powder and an alkylammonium perchlorate. The alkylammonium perchlorate combines with the halogen released upon charging to form an addition product in a solid state. This prevents the halogen from being dissolved in the electrolyte during the charging cycle which would corrode soluble metal cathode and discharge the cell.

3,738,871
STORAGE BATTERY PLATES OF PLASTIC AND LEAD
William R. Scholle, Long Beach, Calif., assignor to Scholle Corporation, Northlake, Ill.
Filed May 6, 1971, Ser. No. 140,742
Int. Cl. H01m *35/04*
U.S. Cl. 136—65 **3 Claims**



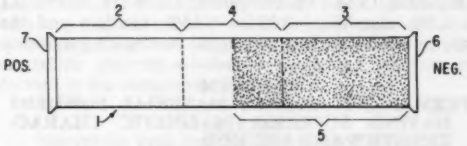
Relates to storage battery plates of the accumulator type reinforced with and containing an appreciable portion of plastic material.

3,738,872
MINIATURIZED THERMAL CELL
Richard T. Ziemba, Burlington, Vt., assignor to General Electric Company
Continuation-in-part of application Ser. No. 595,884, Nov. 21, 1966. This application Jan. 2, 1968, Ser. No. 695,144
Int. Cl. F42b *13/12*; F42c *19/00*; H01m *21/14*
U.S. Cl. 136—90 **11 Claims**



A thermal cell is provided having a housing made up of a case forming one terminal, a pin connector forming the remaining terminal, and an insulative spacer therebetween. A normally solid and nonconductive thermally fusible electrolyte is positioned within the housing in contact with a first electrode in electrical contact with the negative terminal and a cathodic depolarizer in electrical contact with a positive terminal. Thermitic material is mounted in thermally conductive relation with the electrolyte, and is ignited by a cap. The cap is positioned between two rigid surfaces, one of which is a relatively displaceable striker element. In service the thermal cell is mounted in the nose of a H.E. projectile and connected to a coil actuated detonator charge through a voltage actuated switch.

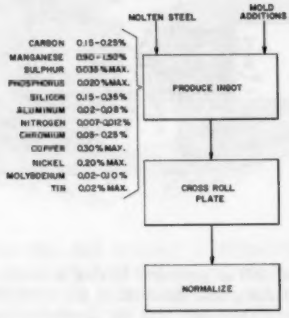
3,738,873
SELF GENERATING THERMOELECTRIC CONVERTER
Le Conte Cathey, Aiken, S.C., assignor to the United States of America as represented by the United States Atomic Energy Commission
Filed Dec. 23, 1964, Ser. No. 420,840
Int. Cl. G21h *1/10*
U.S. Cl. 136—202 **5 Claims**



A single body semiconductor made of a radioactive element having a radioactive isotope heat source of the same element as an integral part thereof. The semiconductor is a compound including radioactive actinide element, such as plutonium, uranium or thorium, and the heat source is a heat-producing radioactive isotope of the same element. Suitable doping impurities, diffused into

part of the semiconductor bar, shift the electrical potential distribution across the center portion to produce the thermoelectric element.

3,738,874
LOW TEMPERATURE STEEL PROCESS
Alfred G. Allten, Rosemont, and Frederick J. Semel, Philadelphia, Pa., assignors to Alan Wood Steel Company, Conshohocken, Pa.
Original application July 24, 1967, Ser. No. 655,465, now abandoned, and a continuation-in-part of application Ser. No. 883,490, Dec. 9, 1969. Divided and this application May 26, 1971, Ser. No. 147,030
Int. Cl. C21d *1/28, 7/14*
U.S. Cl. 148—12 **3 Claims**



The process of making a low temperature weldable steel plate of plain carbon grade and unusually high impact resistance and yield strength in normalized condition. The steel contains carefully controlled amounts of carbon, manganese, sulfur, phosphorus, silicon, aluminum and nitrogen, plus alloying elements which may include chromium, copper, and nickel, certain of which components can be achieved as residual elements in scrap. The alloy will be used especially as plate.

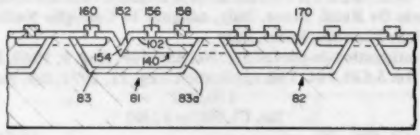
3,738,875
STAINLESS STEEL OF IMPROVED DUCTILITY
Wesley Kalita, New Kensington, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.
No Drawing. Original application Sept. 22, 1969, Ser. No. 860,036. Divided and this application July 14, 1971, Ser. No. 162,474
Int. Cl. C21d *9/46*
U.S. Cl. 148—12 **3 Claims**

Stainless steel of improved ductility and cold rollability, more particularly, stainless steel which may be cold rolled from hot band directly to final gage without intermediate processing and annealing. In accordance with the invention, there is provided a stainless steel consisting essentially of up to 0.6% carbon, 0.2 to 1.0% manganese, 13 to 14% chromium, 0.2 to 1% silicon, 0.1 to 0.3% aluminum, 0.05 to 0.15% titanium and the balance essentially iron with usual steelmaking residuals.

3,738,876
PERMANENT MAGNET MATERIAL POWDERS HAVING SUPERIOR MAGNETIC CHARACTERISTICS AND METHOD
Joseph J. Becker, Schenectady, and Robert E. Cech, Scotia, N.Y., assignors to General Electric Company
No Drawing. Original application June 21, 1968, Ser. No. 738,809, now Patent No. 3,615,914. Divided and this application May 24, 1971, Ser. No. 146,562
Int. Cl. H01f *1/06*
U.S. Cl. 148—105 **6 Claims**

The magnetic coercive force of cobalt-rare earth intermetallic compounds is stabilized by treating the compounds in particle form with zinc or arsenic.

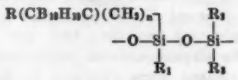
3,738,877
SEMICONDUCTOR DEVICES
Uryon S. Davidsohn, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Aug. 24, 1970, Ser. No. 66,164
Int. Cl. H01l *7/00, 7/64, 19/00*
U.S. Cl. 148—175 **4 Claims**



Various devices are described herein utilizing anisotropic etching and dielectric isolations as means for limiting areas of either conductivity type semiconductor material. Surface junctions normally found in the diffused semiconductor devices of the prior art are also eliminated by the use of overlap diffusion techniques. Anisotropic etching is employed in certain of the devices for attaining buried PN junctions.

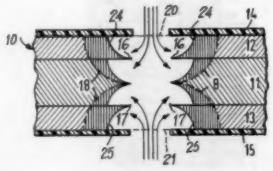
3,738,878
HIGH BURNING RATE SOLID PROPELLANT HAVING A SILICON-CARBORANYL COPOLYMER FUEL BINDER
Joseph Green, East Brunswick, N.J., assignor to Thiokol Chemical Corporation, Bristol, Pa.
No Drawing. Filed Nov. 2, 1967, Ser. No. 681,959
Int. Cl. C06b *11/00*
U.S. Cl. 149—19 **5 Claims**

High burning rate solid propellants having fuel-binders based on carboranyl copolymers having the recurring structural units:



wherein R, R_1, R_2 and R_3 are selected from hydrogen, aliphatic, cycloaliphatic and aryl radicals and *n* is an integer including zero.

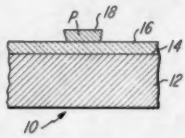
3,738,879
METHOD OF PRODUCING AN EXACT EDGE ON AN ETCHED ARTICLE
Ruprecht von Siemens, Munich, Germany, assignor to Siemens Aktiengesellschaft
Filed Mar. 10, 1971, Ser. No. 122,797
Claims priority, application Germany, Mar. 19, 1970, P 20 13 196.8
Int. Cl. C23f *1/02*; H05k *1/00, 3/04*
U.S. Cl. 156—11 **7 Claims**



An edge more exactly conforming to the outlines of an etching mask is produced by a method which includes providing a metallic foil whose resistance to etching decreases along the depth of its thickness from at least a

first surface, applying an etching mask to at least said first surface of the foil, and subjecting the masked surface to an etching agent. The differential resistance to etching avoids or minimizes undercutting of the edges of the thick foil. The foil may be acted on by the etching agent from one or more surfaces and in each case should decrease in resistance from the surface being acted on. The foil may comprise a series of discrete layers having predetermined thickness relationships with each other. To provide a continuous change of resistance to the etching agent which is inversely proportional to the distance from the unmasked surface, the discrete layers of material having different resistance values may be subjected to a high temperature diffusion treatment whereby their change in resistance follows a smooth curve.

3,738,880
METHOD OF MAKING A SEMICONDUCTOR DEVICE
Abraham Laker, Lebanon, N.J., assignor to RCA Corporation
Filed June 23, 1971, Ser. No. 155,899
Int. Cl. H011 7/50, 7/44
U.S. Cl. 156—17 **3 Claims**



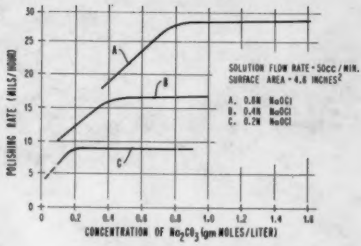
Portions of a polycrystalline silicon layer disposed on a silicon dioxide insulating layer on a semiconductor wafer are removed after diffusing boron into and through the regions to be retained. Good edge definition of the retained silicon and improved yields resulting from fewer oxide pinholes are achieved.

3,738,881
ANISOTROPIC ETCHING OF SILICON AND GERMANIUM
William Charles Erdman, Danielsville, and Paul Felix Schmidt, Allentown, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.
No Drawing. Filed Sept. 22, 1971, Ser. No. 182,891
Int. Cl. H011 7/50
U.S. Cl. 156—17 **6 Claims**

Single crystal silicon and germanium having major faces parallel to the (100) plane may be etched anisotropically with an etchant comprising an oxidizing agent, an alcohol and an alkali metal hydroxide. It has been found in the case of silicon that the presence of the oxidizing agent is not required for etching but inhibits the formation of pyramids which terminate the etching process.

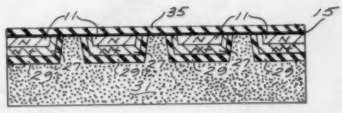
3,738,882
METHOD FOR POLISHING SEMICONDUCTOR GALLIUM ARSENIDE PLANAR SURFACES
Jagtar Singh Basi, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 14, 1971, Ser. No. 189,114
Int. Cl. H011 7/00
U.S. Cl. 156—17 **6 Claims**

An improved method for polishing gallium arsenide planar surfaces is disclosed comprising positioning gallium arsenide wafers or slices in close adjacency to a polishing medium providing a relative motion between said wafer and polishing medium while providing a controlled predetermined flow of alkali metal hypochlorite and alkali carbonate solution to said wafers and polishing medium and continuing the relative motion until the wafer surface



is polished to a smooth and featureless condition whereupon the wafers are washed and removed from the polishing mechanism.

3,738,883
DIELECTRIC ISOLATION PROCESSES
Kenneth E. Bean, Richardson, and Paul S. Gleim, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 19, 1968, Ser. No. 785,244
Int. Cl. H011 7/50
U.S. Cl. 156—17 **1 Claim**

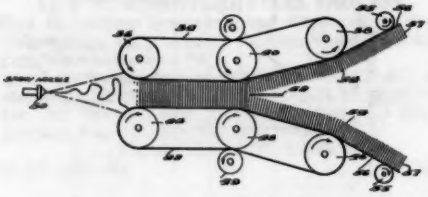


A process for fabricating dielectrically isolated circuit elements for integrated circuits. An etch-resistant layer of silicon nitride is formed over one surface of a monocrystalline semiconductor substrate and a layer of polycrystalline material is thereafter deposited over the silicon nitride layer. A substantial portion is removed from the other surface of the substrate to leave a relatively thin layer thereof. An etch-resistant mask is then formed on the thereby exposed surface of this remaining thin substrate layer and a pattern of isolation moats is etched through the exposed portions of the substrate layer thereby to form discrete islands each comprising substrate material while the silicon nitride layer is substantially unaffected by the etchant and functions as an etch stop. A dielectric layer is thereafter formed over the exposed surfaces of the islands, and a layer of polycrystalline material is deposited over the dielectric layer. The first polycrystalline material is then removed by etching which exposes the silicon nitride layer which again serves as an etch stop and the monocrystalline islands are dielectrically isolated from each other in a common body of polycrystalline material whereafter the circuit elements are formed in the monocrystalline islands.

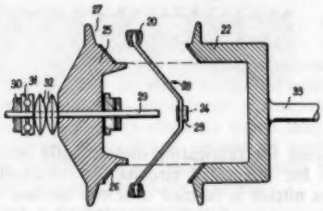
3,738,884
METHOD FOR PRODUCING NON-WOVEN FIBROUS PRODUCTS
John W. Soehngen, Berkeley Heights, N.J., assignor to Celanese Corporation, New York, N.Y.
Original application Sept. 21, 1966, Ser. No. 580,994, now Patent No. 3,607,588. Divided and this application June 22, 1970, Ser. No. 59,823
Int. Cl. D04h 3/16
U.S. Cl. 156—167 **11 Claims**

A method of making non-woven fabrics comprising spray spinning a substantially continuous filament of

thermoplastic polymeric material and collecting this material by means of opposed spaced-apart moving collecting surfaces disposed in the path of the material issuing from the extrusion orifice.



3,738,885
METHODS OF MANUFACTURING STEERING WHEELS
Alexandre Lecomte, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt (Hauts de Seine), and Automobiles Peugot, Paris, France
Filed May 13, 1970, Ser. No. 36,850
Int. Cl. B65h *81/06*
U.S. Cl. 156—172 1 Claim

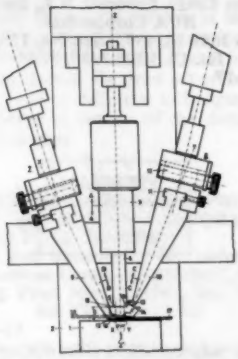


A method of manufacturing a steering wheel for a motor vehicle which comprises a rim connected through arms to an axial member, said rim being obtained either by winding a preliminary pattern or by direct winding of textile glass material selected from the group consisting of monofilaments, yarns or roving, embedded in a plastic resin adapted to set, by using a rotary circular mould formed with a peripheral recess adapted to wind said textile glass, said mould consisting of a pulley formed by a pair of registering and detachable flanges, said method being characterized in that there are provided at the outer ends of said arms a plurality of rim-anchoring projections, and that said arms are so disposed in said mould that their ends project therefrom inside said recess adapted to receive the textile glass winding, the winding operation proper being eventually performed whereby said projections are embedded therein.

3,738,886
BONDING POROUS THERMOPLASTICS
Robert John Southgate, Ipswich, England, assignor to Imperial Chemical Industries Limited, London, England
No Drawing. Filed July 20, 1971, Ser. No. 164,417
Int. Cl. B29c *19/04*
U.S. Cl. 156—273 12 Claims

Bonding a porous polyolefine web having a porosity to air of at least 0.5×10^{-2} mls./sq. cm. sec. cm. to a substrate by depositing a liquid substance having a conductivity of at least 1×10^{-4} mhos cm.$^{-1}$ between the foam and the substrate and subjecting the system to pressure and radio frequency heating to heat the substance so that it melts the thermoplastic to effect a bond.

3,738,887
METHOD OF SEAMLESS CONNECTION OF LEATHER- AND/OR SYNTHETIC LEATHER-PARTS, OR THE LIKE, MATERIAL AND APPARATUS FOR PERFORMING THE METHOD
Richard Hoffmann, Stetten, near Hechingen, Germany, assignor to Firma Bima Maschinenfabrik GmbH, Hechingen, Hohenzollern, Germany
Filed Mar. 17, 1971, Ser. No. 125,060
Claims priority, application Germany, Mar. 21, 1970, P 20 13 675.8
Int. Cl. B29c *19/02;* B30b *15/34*
U.S. Cl. 156—380 6 Claims

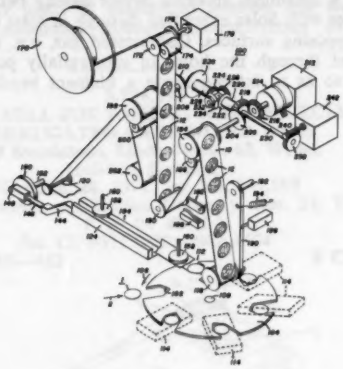


A method of and apparatus for seamless connection of leather- and/or synthetic leather-parts, or the like working material with one of its face parts provided with a glue material layer between the parts, which glue material layer can be activated and the two parts adhering together by a pressure effect which comprises the steps of lowering the face parts to be connected together in a width below an electrode with a glue material layer disposed therebetween, the width being less than the width of the bottom face of the electrode. The electrode is lowered onto the face parts with overlapping the bottom face of the electrode over the face parts, heating the superposed face parts for activating the glue material layer by the electrode sitting thereon, and the face parts are pressed together by the electrode for adhering together of the face parts.

3,738,888
PROCESS FOR DISCRETE ELEMENT TRANSFER FROM A CONTINUOUS TAPE TO A DISCRETE SUBSTRATE
Earl C. Williams, Syracuse, N.Y., assignor to General Electric Company
Filed June 2, 1970, Ser. No. 42,682
Int. Cl. B32b *31/10;* C09j *5/02*
U.S. Cl. 156—238 7 Claims

A clamping unit compressively presses elements mounted on a continuous tape against an adhesive surface of a substrate at a bonding station and transports the substrate and tape together toward a stripping station. Synchronous feed and collection control rollers allow the tape to be held taut, yet free to move toward the stripping station. A drive arrangement for the synchronous rollers is provided to permit the desired tension to be

maintained on the tape and to permit spaced loci on the tape to be aligned with the discrete substrates. A feed

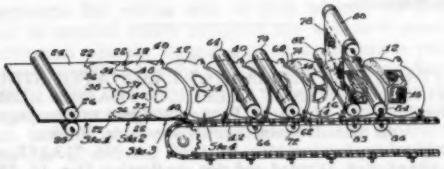


wheel incrementally advances substrates to the bonding station through a plurality of intermediate heat stations.

3,738,889
METHOD OF MAKING A DISPOSABLE FILTERING DEVICE

James P. Whelan, North Marshfield, Mass., assignor to Ad-Tec Products, Inc., North Quincy, Mass.

Original application Oct. 11, 1967, Ser. No. 674,624, now Patent No. 3,567,033. Divided and this application Mar. 1, 1971, Ser. No. 119,688
Int. Cl. B32b *31/00*; B01d *39/08*
U.S. Cl. 156—263 **7 Claims**



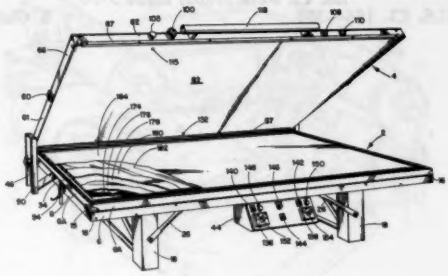
A disposable conical filtering device having gauze covered openings is characterized by structure providing a more rigid and efficient filtering device which is more convenient in use and which is particularly adapted for straining paint or the like. The novel method of producing the present filtering device is characterized by novel steps including die-cutting blanks from a strip of material and assembling the same in a rapid and economical manner with a minimum of waste material.

3,738,890
METHOD OF BONDING A LAMINATING FILM TO A GRAPHIC ART OBJECT

Terence C. Johnson, Hamden, Conn., and Malcolm E. Reed, Reading, Mass., assignors to Seal, Inc., Derby, Conn.

Filed Apr. 8, 1971, Ser. No. 132,359
Int. Cl. B29c *17/00*; C12h *1/00*
U.S. Cl. 156—286 **9 Claims**

A vacuum press adapted for laminating transparent protective film to photographs and the like and for dry-mounting the same to suitable substrates or backing materials. The press comprises a base characterized by a flexible air-impermeable wall which supports the work sheets and a cover assembly hinged to the base. The cover assembly includes a platen which when brought into engagement with the base cooperates with the flexible wall

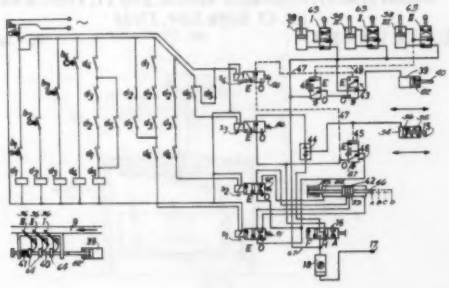


to form a reducible work-receiving chamber. Means are provided for heating the platen and indirectly the work and for evacuating the work-receiving chamber to cause the work to be laminated under heat and pressure.

3,738,891
LABELING MACHINE WITH SPEED ADJUSTING MECHANISM

Klaus-Dieter Püsching and Hans-Jürgen Patzwahl, Alteglofsheim, and Horst Kretschmer, Niedertraubling, Embach, Germany, assignors to Hermann Kronseder, Neutraubling, Germany

Filed May 6, 1971, Ser. No. 140,828
Claims priority, application Germany, July 22, 1970, P 20 36 440.3
Int. Cl. B65b *57/04*; B65c *7/00*
U.S. Cl. 156—363 **12 Claims**



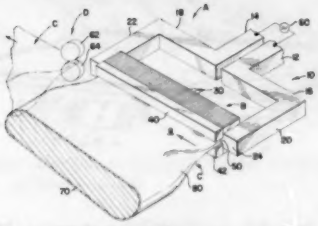
A labeling machine and input conveyor with a variable speed drive and a control mechanism including a series of container sensors spaced physically along an accumulation table and input conveyor and subject to the degree of accumulation of containers on the table and conveyor to actuate said sensors in a sequence which will regulate the variable speed drive to supply the machine with containers at a speed appropriate for the degree of container accumulation. The input conveyor is provided with a container stop which will be actuated to block the admission of containers into the labeling machine when the nearest sensor is relieved of container pressure. Under this condition the variable speed drive continues to drive the machine at low speed, thus to finish processing containers already in the machine. The sensors are triggered only by a build-up or accumulation of containers sufficient to laterally dislocate the containers and exert lateral pressure on the sensor switch feeler.

3,738,892

INDUCTION HEATING APPARATUS FOR SEALING TUBE-LIKE CONTAINERS

Edmund N. Curcio, South Orange, N.J., assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed May 14, 1971, Ser. No. 143,466
Int. Cl. B29c *19/02*; H05b *5/00*
U.S. Cl. 156—380 8 Claims



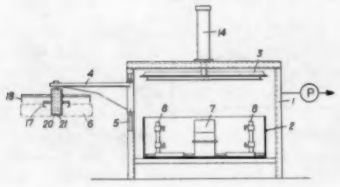
A method and apparatus for sealing by induction the ends of tube-like containers comprised of electrically non-conductive material wherein a thin layer of an electrically conductive material is disposed at least along one side of the area to be sealed which area is then inductively heated to effect adhesion between the contacting surfaces. The area so joined is then pressed together at least after being heated.

3,738,893

APPARATUS FOR POSITIONING A TREAD BAND ON A VEHICLE TIRE

Bruno Edler, Roseggerstrasse 25, a-8600 Bruck a.d. Mur, Austria

Filed July 7, 1970, Ser. No. 52,861
Claims priority, application Austria, July 17, 1969, A 6875
Int. Cl. B29h *5/04*, *17/36*
U.S. Cl. 156—394 15 Claims



An apparatus for positioning a closed thread band on a vehicle tire whereby the closed tread band is disposed around and spaced from a tire and there the space between the tread band and the tire is evacuated. The tread band is thereafter brought into contact with the tire and affixed thereto.

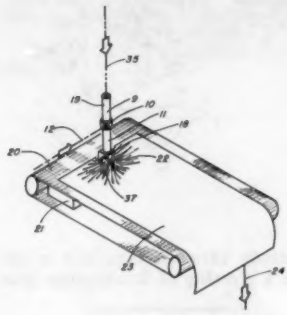
3,738,894

FORAMINAL APPARATUS FOR SPLAYING AND DEPOSITING NONWOVEN FILAMENTARY STRUCTURES

Walter Peter Lipscomb and Garland Linwood Turner, Chesterfield County, Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Sept. 28, 1971, Ser. No. 184,422
Int. Cl. D04h *3/00*
U.S. Cl. 156—441 6 Claims

An apparatus for augmenting dispersal and improving deposition of a plurality of continuous filaments onto a continuously moving surface whereby random distribution of the filaments is provided for the production of uniformly distributed nonwoven webs. Such apparatus comprises a foraminal splaying device having two opposing surfaces with holes extending through at least one of the two opposing surfaces. Compressed gas, e.g. air, is discharged through the holes in substantially parallel columns so as to interpenetrate a filament bundle passing between the two opposing surfaces. The two opposing surfaces of the splaying device have continuous surfaces of curvature which surfaces exhibit a converging to diverging pattern as the opposing surfaces extend from the exit of the aspirator. The foraminous splaying device is positioned near the exit of an aspirator so as to spread the filaments in substantially all directions and thereby to provide greater openness and greater random laydown of filaments.

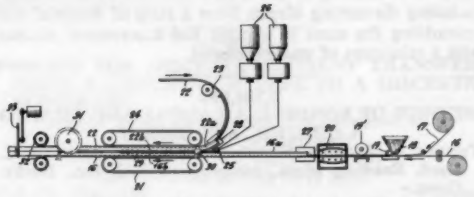


3,738,895

APPARATUS FOR MAKING LAMINATED STRUCTURAL PANELS OF CELLULAR FOAMED RESIN

Jean Paymal, Clermont, France, assignor to Compagnie de Saint-Gobain, Neuilly-sur-Seine, France

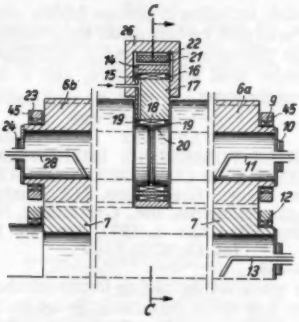
Original application Mar. 14, 1968, Ser. No. 713,153, now abandoned. Divided and this application Dec. 16, 1971, Ser. No. 209,001
Claims priority, application France, Mar. 22, 1967, 99,785; Dec. 11, 1967, 131,728; Dec. 28, 1967, 134,050
Int. Cl. B31f *1/00*; B32b *5/18*; B29d *27/00*; B29g *7/02*
U.S. Cl. 156—443 29 Claims



The production of laminated structural panels, particularly for buildings, composed of a cellular core of foamed resin with facing layers of a hardenable resin, with or without reinforcement, which are assembled in such ways

that the foaming of the core resin occurs simultaneously with the hardening of the resin of the facing layers so that the assembly is integrated effectively, giving rise to no faulty joints or deleterious stresses, and thereby imparting maximum strength characteristics to the panels.

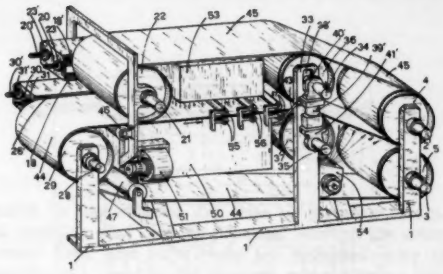
3,738,896
ROLLING MILL FOR PASSING WEBS, ESPECIALLY CORRUGATED CARDBOARD WEBS
Rolf Sonnichsen, Lindenstrasse 62, Wedel, Holstein, Germany
Filed Jan. 20, 1971, Ser. No. 107,899
Claims priority, application Germany, Jan. 31, 1970, P 20 04 483.1
Int. Cl. B31f *1/20;* B30b *3/04*
U.S. Cl. 156—462 **8 Claims**



Apparatus for rolling web or strip wherein at least a pair of parallel rollers compress the web as it passes therebetween wherein at least one of the rollers is provided with auxiliary bearing structure located intermediate its ends. Such auxiliary bearing structure includes an eccentric element mounted within a recess defined in the roller, and the element is mounted upon the apparatus frame for adjustment in a radial direction. A rolling ring is then mounted upon the eccentric element and the roller ring is of an axial width substantially equal to that of the recess defined in the supported roller wherein the outer periphery of the roller ring coincides with the supported roller surface at the point of roller contact with the web being treated.

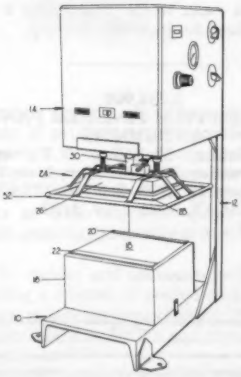
3,738,897
FABRICS COUPLING MACHINE
Giacomo Bianchini, Viale Affori 19, Milan, Italy
Filed May 18, 1971, Ser. No. 144,593
Claims priority, application Italy, May 22, 1970, 24,968/70
Int. Cl. B32b *31/04*
U.S. Cl. 156—498 **6 Claims**

A machine for thermic coupling a fabrics in general and collars in particular with a reinforcing interlining, provided with a layer of adhesive means, characterized in that it includes: two belts conveyors, one upper and one lower belt conveyor, cooperating with each other, between which the fabrics to be coupled with each other are held in pressed condition and supplied to the various phases of treatment, a heating means consisting of an infra-red ray source and a warm air flow, two pressure rollers over which move the aforesaid belt conveyors, two driving rollers for the aforementioned belt conveyors, the speed of which may be varied, disposed in a lowered position relative to the pressure rollers and a cooling means consisting of a fan disposed immediately after the pressure



rollers and feeding in cool air to cool the obtained coupled fabric.

3,738,898
APPARATUS FOR BONDING MATERIALS WITH HEAT SETTABLE ADHESIVE
Paul E. Lowe and Byron K. Pool, Cincinnati, Ohio, assignors to Natmar, Inc., Cincinnati, Ohio
Filed Feb. 4, 1971, Ser. No. 112,604
Int. Cl. B32b *31/00;* B30b *15/34*
U.S. Cl. 156—498 **9 Claims**

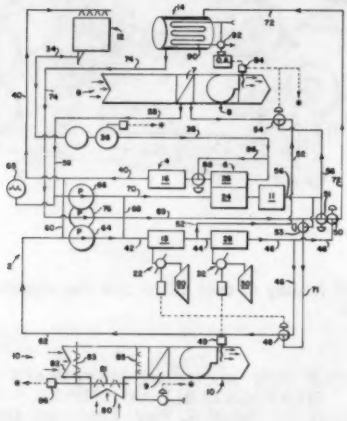


Machine having a platen and a pressure clamping head arranged to clamp the materials to be bonded against the platen under pressure, and means for successively heating and thereafter cooling the clamped materials so as to effect a complete bonding prior to release of the materials.

3,738,899
AIR CONDITIONING SYSTEM AND METHOD
Edward Russell McFarlan, Westfield, N.J., assignor to A. I. McFarlan Company, Inc., Springfield, N.J.
Filed Aug. 2, 1971, Ser. No. 168,013
Int. Cl. F25b *13/60*
U.S. Cl. 165—2 **15 Claims**

An air conditioning system and method of the type wherein streams of hot water and chilled water are supplied from a central station to air treating units and the

water returns to the central station from each of the units through a common return line. A storage tank is connected to receive both chilled water and heated water depending upon the operating conditions, and provides a "flywheel effect," i.e., heat is removed from the tank during periods



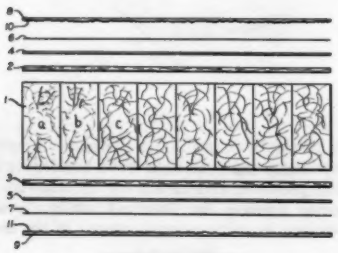
of dominant heating load conditions by passing chilled water to the tank where it is stored in anticipation of a need for increased cooling, and heat is delivered to the tank during periods of dominant cooling load conditions by passing heated water to the tank where it is stored in anticipation of a need for increased heating.

3,738,900

TEXTURED FILM FINISHED PANELS AND DOORS

William A. Matzke, Mahopac, N.Y., assignor to Champion International Corporation, New York, N.Y.

Filed Aug. 18, 1971, Ser. No. 172,670
Int. Cl. B32b *1/04, 3/02*
U.S. Cl. 161—41 **6 Claims**



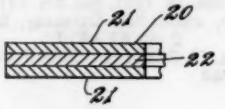
This invention pertains to embossed decorative patterns and decorative laminates, particularly textured film finished panels and doors and the method of manufacture wherein a wadding sheet or pad sheet is interposed between the surface film and the substrate. High quality embossed products of great durability are economically manufactured by this technique.

3,738,901

CLUTCH DISK AND METHOD OF MAKING

Hiromichi Matsushima, 123 Takabayashi-cho, and Tomoyuki Ito, 65–2 Nakazawa-cho, both of Hamamatsu-shi, Shizuoka-ken, Japan

Continuation-in-part of abandoned application Ser. No. 792,004, Jan. 17, 1969. This application Mar. 29, 1971, Ser. No. 128,709
Int. Cl. F16d *69/02, 69/04*
U.S. Cl. 161—42 **2 Claims**



A clutch disk including a porous feltlike sheet of organic fibers, activated carbon made from coconut shells, and resol-type phenolic resin bonded to a core plate by comolding under heat and pressure, and a method of manufacture of the same.

3,738,902

KNIT FABRICS POSSESSING IMPROVED DURABLE-PRESS AND COMFORT PROPERTIES

John Dean Turner, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

No Drawing. Filed Apr. 1, 1971, Ser. No. 130,510
Int. Cl. B32b *7/00*
U.S. Cl. 161—89 **6 Claims**

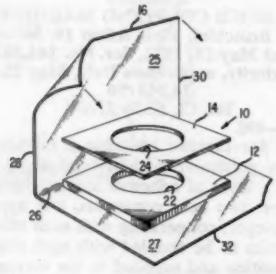
A durable press textile having improved shape retention, comfort and wear characteristics which comprises a knitted fabric having a face consisting at least essentially of non-cellulosic yarn (which is free from durable press finish) and a back consisting at least in part of cellulosic yarn, the back having a durable press reactant finish thereon. The product may be made by knitting a single, double or warp knit fabric, presensitizing the cellulosic back by application thereto of a durable press resin, pressing and curing.

3,738,903

HERMETIC SEALING OF APERTURED ARTICLES

Charles Berwick, Yardley, Pa., and Colin Alexander Henry, Princeton Junction, N.J., assignors to Homasote Company, Trenton, N.J.

Filed May 24, 1971, Ser. No. 146,047
Int. Cl. B65b *53/02;* **B65d** *65/38, 65/02*
U.S. Cl. 161—113 **5 Claims**



An apertured article of manufacture, for example an end suspension panel for a reel on which a web of material may be wound, is hermetically sealed in a plastic

film envelope both along the periphery and along the edge of an aperture of the article. Opposite faces of the envelope, normally unconnected in the area of the aperture, are there brought together and heat-sealed.

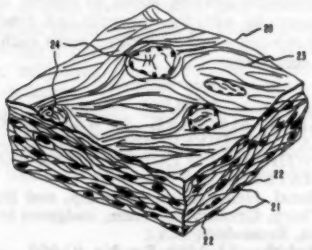
The invention also embraces a method of hermetically sealing opposite, normally unconnected, faces of a plastic film envelope along the edge of an aperture of an enclosed article by clamping them together along the edge and thereafter heat-sealing them adjacent the clamping location.

Apparatus for effecting a hermetic seal of a plastic film envelope, along the edge of an aperture formed in a housed article, includes opposed annular clamping jaws that clamp face or cover portions of the envelope together within the aperture, after which a correspondingly shaped heating element enters the aperture, heat-seals the cover portions, and removes unwanted areas.

3,738,904
FILLED, BIAXIALLY ORIENTED, POLYMERIC FILM

Richard Masayoshi Ikeda, Chadds Ford, Pa., and George Joseph Ostapchenko, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 28, 1971, Ser. No. 157,367
Int. Cl. B32b *3/00*
U.S. Cl. 161—117 **14 Claims**



A thermoplastic film and a process for preparing the film which is characterized as a cellular polymer matrix with a filler dispersed therein, biaxially oriented by stretching in mutually perpendicular directions and having a void content of at least about 30 to 70%, an elongation at break at 22° C. of at least about 8% in either direction of stretch, a fibrous surface having about 2 to 40 surface ruptures per square millimeter, and an oxygen permeability of about 900 to 10,000,000 cc./100 sq. in./24 hrs./atmosphere/mil.

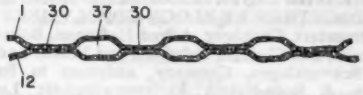
This film has many desirable and controllable properties such as density, opacity, porosity, strength and surface texture making it useful for various applications such as a bag for packaging groceries, a synthetic writing paper, an ultra filter, or a substrate for an ion exchange membrane.

3,738,905
PAPER TOWELING MATERIAL AND METHOD OF COMBINING INTO MULTI-PLY PRODUCTS

Gordon D. Thomas, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Apr. 29, 1970, Ser. No. 32,912
Int. Cl. B32b *1/00, 3/00, 3/28*
U.S. Cl. 161—127 **12 Claims**

Multi-ply creped cellulose wadding material useful in sheet form as a paper tissue toweling and the like. The multi-ply wadding material structure includes lands and recess areas embossed into outer webs of the sheet. In two-ply toweling material internal lands of one ply extend transversely to internal lands of the other and the two plies are secured together at spaced cross-over zones of the lands. The lands bridge recess areas and limit sheet

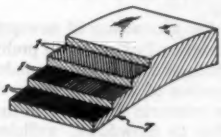


extension in the wet and dry state of the sheet. Additional wadding plies may be provided between the outer embossed plies. The outer webs are embossed prior to lamination in a steel nip, for example, and are united into a sheet structure in the steel to steel nip.

3,738,906
PYROLYTIC GRAPHITE-SILICON CARBIDE MICROCOMPOSITES

Eugene L. Olcott, Falls Church, Va., assignor to Atlantic Research Corporation, Alexandria, Va.

Filed Aug. 21, 1970, Ser. No. 65,899
Int. Cl. B32b *5/08*
U.S. Cl. 161—168 **8 Claims**



A rigid pyrolytic graphite microcomposite material comprising a matrix of pyrolytic graphite containing embedded therein codeposited crystalline silicon carbide comprising aciculae oriented approximately perpendicular to the *a–b* plane of the crystallite layers of the pyrolytic graphite. The SiC comprises at least about 5 volume percent of the microcomposite material, preferably at least about 10 volume percent.

A method for making said microcomposite material comprising pyrolyzing a mixture of methyl trichlorosilane and a hydrocarbon gas at temperatures of about 2800°F to 4000°F, preferably about 3200°F to 3800°F and, thereby codepositing pyrolytic graphite and SiC.

A rigid composite pyrolytic graphite article comprising a matrix of the above microcomposite material containing embedded therein at least one reinforcing refractory filament or strand layer. The refractory filament or strand layer comprises a plurality of unidirectional and substantially parallel, laterally spaced, individual, continuous refractory filaments or strands. The microcomposite matrix is nucleated from each of the individual refractory filaments or strands and interconnected to form a continuous matrix phase surrounding and interconnecting the individual filaments or strands comprising the embedded filament or strand layer.

A method for making said rigid pyrolytic graphite article comprising winding a continuous, individual, refractory filament or strand around a shaped form and simultaneously pyrolyzing a mixture of methyl trichlorosilane and a hydrocarbon gas onto the filament or strand at about the point of winding contact to nucleate pyrolytic graphite and SiC from the filament or strand, winding additional turns of the filament or strand around the form, each additional turn being spaced from previously wound turns and, as each of the additional

turns is wound, simultaneously pyrolyzing the mixture of methyl trichlorosilane and hydrocarbon gas thereon at about the point of winding contact and on the codeposited pyrolytic graphite and SiC nucleated from previously wound turns.

3,738,907

THERMOPLASTIC LAMINATES BONDED TOGETHER BY BLOCK COPOLYMERS

Klaus Bronstert, Carlsberg, Alfred Hofmann, Bobenheim-Roxheim, and Gerhard Fahrbach and Volker Ladenberger, Schwetzingen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Germany

No Drawing. Filed May 24, 1971, Ser. No. 146,448

Int. Cl. B32b *15/08, 27/32*

U.S. Cl. 161—217 **3 Claims**

Laminates consisting of at least two thermoplastics bonded together by an adhesive. The adhesive is a block copolymer of the Formula A—B, in which A is a polyvinylaromatic block and B is a polyolefin block. The laminates may be used in the manufacture of domestic appliances, in the automobile industry or for packaging applications.

3,738,908

PREHYDROLYSIS AND DIGESTION OF BAGASSE FIBERS

Eduardo J. Villavicencio, Paramonga, Peru, assignor to Process Evaluation and Development Corporation, New York, N.Y.

No Drawing. Filed June 1, 1971, Ser. No. 149,000

Int. Cl. D21c *3/26*

U.S. Cl. 162—80 **6 Claims**

Pulp, suitable for production of newsprint, is prepared from sugarcane bagasse by controlled prehydrolysis under acid conditions followed by digestion under alkaline conditions in the presence of an alkali metal silicate or alkali metal bisulfite or mixtures thereof, and thereafter adding to the pulp, prior to blowdown, sufficient amounts of alkali metal silicate as required.

3,738,909

MAGNESIUM HYDROXIDE-CONTAINING PAPER

John Maskal, Ivan M. Thompson, and Henrik R. Heikel, Ludington, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Nov. 4, 1968, Ser. No. 773,350, now Patent No. 3,639,158. Divided and this application May 17, 1971, Ser. No. 144,248

Int. Cl. D21h *3/66*

U.S. Cl. 162—181 A **1 Claim**

Paper possessing outstanding opacity, whiteness and gloss characteristics containing a magnesium hydroxide pigment having about 1 to 5 weight percent calcium ion concentration in solid solution therewith and methods of manufacturing such paper are provided. The pigment is contained either as a paper filler or as a component of a coating pigment composition.

3,738,910

NOZZLE ADJUSTING ARRANGEMENT FOR A PAPERMAKING MACHINE HEADBOX

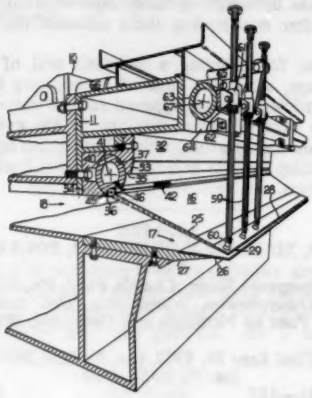
Donald B. De Noyer, Beloit, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Continuation-in-part of application Ser. No. 81,823, Oct. 19, 1970. This application Feb. 8, 1972, Ser. No. 224,572

Int. Cl. D21f *1/02*

U.S. Cl. 162—347 **9 Claims**

A headbox for a papermaking machine is disclosed with an arrangement for adjusting the upper lip of a tapered nozzle paper stock discharge passage. A cylindrical bearing is supported by headbox front wall structure for rotation about a horizontal axis central to the cylindrical bearing. The upstream edge of the upper lip of the stock discharge nozzle is journaled in a socket defined in the outer periphery of the cylindrical bearing for supporting the upstream edge of the upper lip relative to the bearing.



A linkage is connected to the cylindrical bearing for rotating the cylindrical bearing about its central axis and moving the upper lip with the upstream and downstream edges thereof moving along respective paths each having a horizontal component.

3,738,911

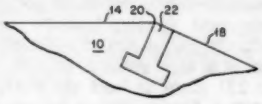
PAPERMAKING MACHINE DEWATERING DEVICES HAVING DIVERGING TRAILING SURFACES WHICH INCLUDE WEAR-BEARING INSERT MATERIALS

Arnold F. Kienzl, Heidenheim, Germany, and Benjamin Adelbert Thorp, Greeneville, Tenn., assignors to Huyck Corporation, Rensselaer, N.Y.

Filed Nov. 23, 1970, Ser. No. 91,992

Int. Cl. D21f *7/00*

U.S. Cl. 162—374 **8 Claims**



This invention relates to dewatering devices for papermaking machinery and, more particularly, to hydrofoil blades which are characterized by having wear-bearing material forming the diverging trailing surface in the region of the crease line which forms its juncture between the trailing surface and the adjacent top surface.

3,738,912

FUEL ELEMENT FOR HIGH TEMPERATURE REACTOR

Lothar Rachor, Kleinauheim, and Karl-Gerhard Hackstein, Hanau am Main, Germany, assignors to Nukem Nuklear-Chemie und-Metallurgie, GmbH, Wolfgang, near Hanau am Main, Germany

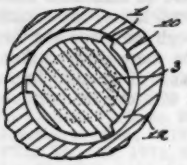
Filed Sept. 10, 1969, Ser. No. 856,542

Int. Cl. G21c *3/18*

U.S. Cl. 176—71 **12 Claims**

There is provided a fuel element for high temperature reactors comprising a fuel body and a structural graphite body surrounding the fuel body and spaced therefrom.

Flange means on either the fuel body or the graphite body is provided extending part way through the space to provide for possible relative changes in dimensions of the fuel body and the graphite body.



3,738,913
METHOD OF PREPARING POLYPEPTIDES

Vernon L. Johnsen, La Grange, and Raymond S. Burnett and Eugene V. Matern, Chicago, Ill., assignors to Wilson Pharmaceutical & Chemical Corporation

No Drawing. Continuation-in-part of application Ser. No. 548,374, May 9, 1966, which is a continuation-in-part of application Ser. No. 301,970, Aug. 14, 1963, now abandoned. This application Sept. 11, 1970, Ser. No. 71,355

Int. Cl. C12d *13/06*

U.S. Cl. 195—29 7 Claims

The method of producing the polypeptides of this invention deals with protein hydrolysis wherein a collagen-containing material is subjected to heat in the presence of aqueous solution having sulfite ions present, to produce a hydrolyzed protein solution of reduced gel-forming character having a Formol Nitrogen Value of the order of 6 or less, subjecting the hydrolyzed protein solution to anion exchange treatment and thereafter further hydrolyzing the proteins using proteolytic enzymes to produce a polypeptide product having a Formol Nitrogen Value in the range of 8 to 17, which polypeptides are useful for treatment of hair due to unique sorption characteristics.

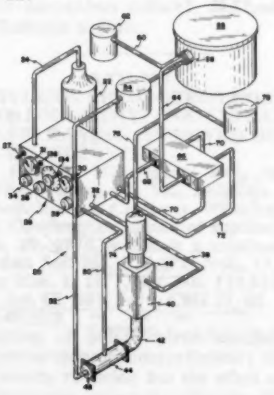
3,738,914
APPARATUS FOR PRESERVATION OF ORGANS

Gale H. Thorne, Bountiful; Orin Lew Wood, Salt Lake City, and Kay L. Knudson, Murray, all of Utah, assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Oct. 6, 1969, Ser. No. 863,869

Int. Cl. C12k *9/00*

U.S. Cl. 195—127 8 Claims



Apparatus and method of preserving life organs, the apparatus having an organ container in which the organ may be subjected to elevated pressure, a pump pulsatilely delivering perfusate into the organ and an oxygenator to oxygenate the perfusate effluent from the organ. A constant pressure bias maintains a minimum pressure on the perfusate between pulses. A fluid flow control system delivers driving fluid in a pulsed manner to the pump at a selected rate and at selected pulse duration. The method includes delivering pulsed oxygenated perfusate to the organ and uniformly conducting perfusate away from the organ and providing a constant pressure bias on the perfusate. Loss or gain of liquid volume caused by waste secretion by the organ is compensated for.

3,738,915
METHOD OF SEPARATING VINYL ACETATE FROM LIQUID MIXTURES WITH PLURAL DISTILLATIONS AND SIDE STREAM PHASE SEPARATION

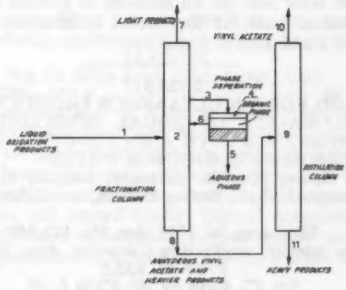
Lucio di Flore, Milan, Claudio Divo, Saronno, and Marcello Ghirga, Bresso, Italy, assignors to Societá Italiana Resine S.p.A., Milan, Italy

Filed June 18, 1971, Ser. No. 154,374

Claims priority, application Italy, July 1, 1970, 26,853/70

Int. Cl. C07c *67/06*

U.S. Cl. 203—39 11 Claims



Vinyl acetate is separated from mixtures also containing methyl acetate and water, by feeding the mixtures to an intermediate position of a fractional distillation column, drawing off an aqueous phase above that position and separating it into an aqueous and a organic phase, returning the organic fraction to the column at a point between the mixture feed point and the point at which the aqueous phase is drawn off, and removing light products at the top of the column and vinyl acetate, with heavy products, at the bottom for subsequent fractionation.

3,738,916
PROCESS FOR THE PRODUCTION OF REGENERATIVELY COOLED ROCKET COMBUSTION CHAMBERS AND THRUST NOZZLE ASSEMBLIES

Karl Butter, Munich, and Kuno Knauer, Moosach, Germany, assignors to Messerschmitt-Bolkow-Blohm, GmbH, Munich, Germany

Filed Mar. 12, 1971, Ser. No. 123,535

Claims priority, application Germany, Mar. 28, 1970, P 20 15 024.7

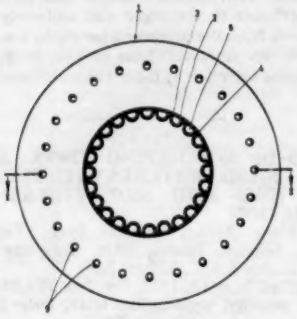
Int. Cl. C23b *7/00, 7/02;* B65h *8/00*

U.S. Cl. 204—9 9 Claims

A process for the production of rocket combustion chambers and thrust nozzle assemblies having lengthwise cooling channels. The process consists of the following steps:

(1) Cutting the negative form of the cooling channels into the surface of a suitable core;

(2) Galvanically depositing a first layer on the core surface to provide the inner wall of the rocket combustion chamber and thrust nozzle assembly said inner wall also defining said cooling channels;



(3) Filling the cooling channels externally with an electrically conductive fill material; and

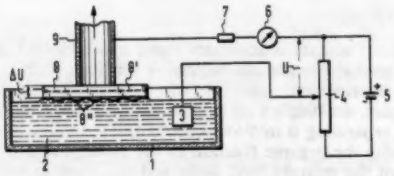
(4) Galvanically depositing a second layer on said first layer and the fill material to provide a smooth external wall for the rocket combustion chamber and thrust nozzle assemblies.

3,738,917

METHOD FOR SIMULTANEOUS PRODUCTION OF A PLURALITY OF EQUAL SEMICONDUCTOR COMPONENTS WITH A PN JUNCTION FROM A SINGLE SEMICONDUCTOR WAFER

Werner Spath, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Munich, and Erlangen, Germany

Filed Aug. 16, 1971, Ser. No. 171,957
Claims priority, application Germany, Aug. 18, 1970, P 20 41 035.9
Int. Cl. B01d *59/40;* C23b *5/48*
U.S. Cl. 204—15 **5 Claims**



Following the production of a plurality of equal semiconductor components in one semiconductor wafer, the front part of the wafers that is bordered by all components, was subjected to electrolytical processing which influences the defective components, permanently, and differently than those which are in good order. After severing of the semiconductor wafer, the components are subsequently used or valued according to these permanent differences.

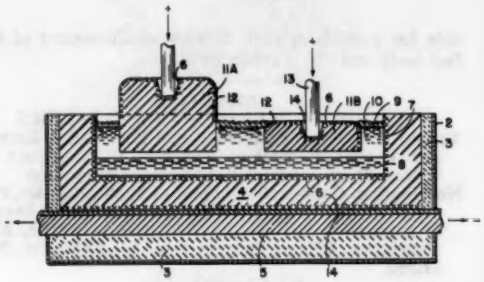
3,738,918

REDUCTION OF ALUMINUM WITH IMPROVED REDUCTION CELL AND ANODES

Arthur F. Johnson, 203 Creole Lane, North Gate Urban Farms, Franklin Lakes, N.J. 07417

Filed Aug. 16, 1971, Ser. No. 172,047
Int. Cl. B01k *3/04;* C22d *3/02*
U.S. Cl. 204—290 R **6 Claims**

A system for the fused fluoride electrolysis of aluminum in a potcell wherein a carbonaceous anode and potlining are preserved against deterioration by impregnating their respective surfaces with a pitch-fluoride mixture and a pitch-graphite mixture. Atmospheric oxidation of anode surfaces is prevented so maximum anode cross sectional area is preserved and, hence, has minimum resistance for current travel through the anode and through the underlying electrolyte. The more dense carbon surface also reduces corner erosion of anodes. Impregnation is preferably carried out with one or more applications of aluminum fluoride suspended in a high melting, low volatile coal tar pitch. An improved potlining protects against electrolyte penetration and circulating metal erosion of the potlining surface, and improves conductivity; the lining bottom is sealed and smoothed with graphite suspended in molten pitch, which is absorbed by capillary attraction, and which increases conductivity. The lining walls are sealed and smoothed with a similar mixture of fluorspar and pitch, which decreases conductivity.

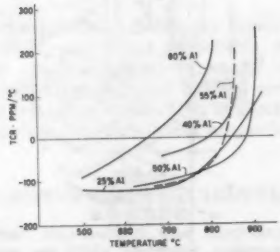


3,738,919

TECHNIQUE FOR ADJUSTING TEMPERATURE COEFFICIENT OF RESISTANCE OF TANTALUM ALUMINUM ALLOY FILMS

John Michael Chilton, Coopersburg, and Donald Jaffe, Emmaus, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of abandoned application Ser. No. 214,205, Dec. 30, 1971. This application Apr. 13, 1972, Ser. No. 243,630
Int. Cl. C23c *15/00*
U.S. Cl. 204—37 R **5 Claims**



A technique for adjusting the temperature coefficient of resistance of sputtered tantalum aluminum alloy films to a value within the range of −100 to 300 p.p.m./° C. involves heat treating the sputtered film at temperatures

ranging from 650–950° C. in an ambient in which the maximum partial pressure of oxygen is 1×10^{-5} torr. The described technique permits the realization of temperature coefficients of resistance of approximately zero, thereby maximizing the device applications of such films.

3,738,920

PLATING TARNISH-INHIBITED BRIGHT SILVER ALLOY

Gaetano Thomas Viglione, R.F.D. 1, Amesbury, Mass. 01913

No Drawing. Filed May 20, 1971, Ser. No. 145,514
Int. Cl. C23b *5/32, 5/44*
U.S. Cl. 204—43 6 Claims

A plating bath, process and alloy comprising tin, silver and nickel for tarnish-inhibited bright silver applications. An alkaline cyanide water bath is employed. The alloy composition is 20 to 45% by weight of tin, 45 to 70% by weight of silver, balance nickel and impurities.

3,738,921

ANODIC OXIDATION OF ALUMINUM AND ALLOYS THEREOF TO FORM HARD ANODIZED COATINGS THEREON

Marguerite Elise Lestrade and Jean Herret, Tarbes, France, assignors to Etat Francais, Paris, France

No Drawing. Filed July 8, 1971, Ser. No. 160,921
Claims priority, application France, July 9, 1970, 7025414
Int. Cl. C23b *9/02*
U.S. Cl. 204—58 3 Claims

Aluminum and alloys thereof are anodized with a hard coating by anodic oxidation at a temperature between 15 and 20° C. with a current density of 2.5 and 3.5 amperes/dm.² for a time between 1 and 2½ hours in an electrolyte having the following composition.

	G./liter
$Al_2(SO_4)_3.18H_2O$	200–400
$(COOH)_2.2H_2O$	20–50
$(CH_2OH—CHOH—CH_2OH)$	7–20

3,738,922

ELECTROPOLISHING BATH SOLUTION

Emil Toledo, Natick, Mass., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Jan. 20, 1972, Ser. No. 219,512
Int. Cl. C23b *3/06*
U.S. Cl. 204—129.9 4 Claims

A principally phosphoric acid electropolishing bath for copper beryllium wire is characterized by additions of small amounts of copper sulfate and ammonium sulfate (or of copper ammonium sulfate), and sodium molybdate, and a fluoboric additive.

3,738,923

POLY(ETHYLENE/CHLOROTRIFLUOROETHYLENE) AND POLY(ETHYLENE/TETRAFLUOROETHYLENE) HAVING IMPROVED HIGH TEMPERATURE PROPERTIES

Dana Peter Carlson, Wilmington, Del., and Norman Eugene West, Vienna, W. Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 4,395, Jan. 20, 1970, which is a continuation-in-part of application Ser. No. 777,172, Nov. 19, 1968. This application Mar. 1, 1971, Ser. No. 119,814
Int. Cl. B01j *1/10;* C08f *27/00*
U.S. Cl. 204—159.2 13 Claims

The subjecting of poly(ethylene/tetrafluoroethylene) and poly(ethylene/chlorotrifluoroethylene) to a moderate amount of ionizing radiation has the effect of improving the tensile properties, especially ultimate elongation, of the copolymers at elevated temperatures. The amount of radiation required to obtain this improvement is minimized by following the radiation treatment with heat treatment of the copolymer.

3,738,924

PROCESS FOR THE SOLVENT CASTING OF CELLULOSE FILMS USING RADIATION, AND PRODUCTS THEREOF

Billy R. Dotson, Spencerport, Edward D. Morrison, Rochester, and Robert F. Williams, Jr., Webster, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed July 6, 1971, Ser. No. 160,131
Int. Cl. B01j *1/10, 1/12*
U.S. Cl. 204—159.12 15 Claims

Significantly increased processing rates can be obtained when cellulose ester dopes used in solvent casting processes for manufacturing cellulose ester film products (for photographic film base, for example) are modified with one or more compatible monomeric materials capable of undergoing free radical polymerization, and the resulting cast (modified) dopes are irradiated with high-energy radiation to polymerize the compatible monomer portion of the dope before the cast layer is stripped from the casting web. The resulting film products have properties equal to or better than conventional cellulose ester films in spite of the degradation of the cellulose ester material by the high-energy radiation that might have been expected.

3,738,925

CONCENTRATION PROCESS

Brian Alfred Cooke, Knotty Green, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Mar. 19, 1971, Ser. No. 126,317
Claims priority, application Great Britain, Mar. 26, 1970, 14,833/70
Int. Cl. B01k *5/00, 5/02;* B01d *13/02*
U.S. Cl. 204—180 P 28 Claims

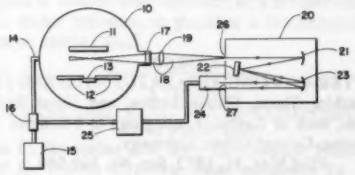
Paint compositions, in which pigment, ionised binder and binder counter-ion are dispersed in a continuous medium, are concentrated under the influence of an electric field between barriers of material permeable to continuous medium and binder counter-ion but impermeable to pigment and ionised binder. Diluted aqueous paints, particularly when obtained by rinsing articles coated by electrodeposition, are treated to provide a more suitable effluent.

3,738,926

METHOD AND APPARATUS FOR CONTROLLING THE ELECTRICAL PROPERTIES OF SPUTTERED FILMS

William Dickson Westwood and Robert James Boynton, Ottawa, Ontario, Canada, assignors to Bell Canada, Montreal, Quebec, Canada

Filed Mar. 28, 1972, Ser. No. 238,817
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 10 Claims



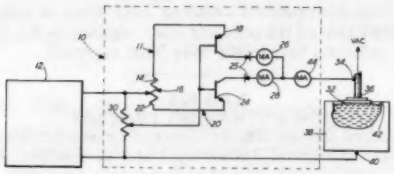
A method and apparatus for monitoring the sputtering of films by measuring the intensity of emission of two wavelengths in the light emitted by the plasma or glow discharge in the sputtering chamber. Two emission wavelengths are chosen which have a relationship which are indicative of sputtering conditions and are related to the

particular electrical property of the film to be controlled. For example, the emission for nitrogen and argon are used for the control of the resistance of a tantalum film, the supply of nitrogen controlled to maintain a predetermined relationship between the emissions for nitrogen and argon.

3,738,927
ASYMMETRICAL CONTROLLED CURRENT ELECTROPLATING

Richard C. Miller, Sinking Spring, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Apr. 23, 1971, Ser. No. 136,781
Int. Cl. B01k *3/00*; G05f *5/00*
U.S. Cl. 204—228 **7 Claims**



Gold is electroplated onto integrated circuits formed on a slice of silicon with asymmetrical alternating current. A unique current control unit provides consistency of the plating current even though the concentration of a plating solution may change during the plating operation.

The current control unit includes an NPN transistor and a PNP transistor with both outputs of the transistors connected in parallel to a terminal that contacts the silicon slice during plating thereof. A conventional source of symmetrical alternating current is connected to the emitter of the two transistors through a potentiometer. The potentiometer is adjusted to provide a desired ratio between the current carried through the NPN transistor and the current carried through the PNP transistor.

A separate means of biasing is provided so that the current through the transistors can be accurately controlled. The PNP transistor is biased to conduct a positive portion of the wave shape and the NPN transistor is biased to conduct a negative portion of the wave shape.

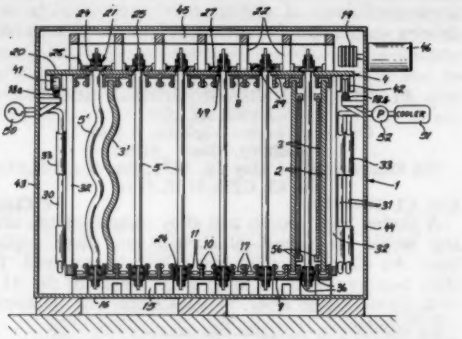
Thus, by establishing the desired ratio with the potentiometer, a controlled degree of asymmetry can be achieved. By controlling the level of biasing, a controlled magnitude of current can also be provided to the plating operation.

3,738,928
SPUTTER-COATING APPARATUS WITH END FEED

Hans Joachim Glaser, Gelsenkirchen, and Horst Beckmann, Bochum, both of Germany, assignors to Flachglas AG Delong-Detag, Gelsenkirchen, Germany

Filed Mar. 31, 1972, Ser. No. 240,002
Claims priority, application Germany, Apr. 2, 1971, P 21 16 190.0
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 **9 Claims**

A sputter-coating apparatus comprises an elongated chamber provided at one end with a loading door and having internally a plurality of pairs of guide rails between which vertical platelike workpieces are stood. A carriage is horizontally displaceable above the workpieces and is provided with a plurality of suspended sputter-coating cathodes connected together as a rack whose lower end is guided between the lower rails. All of the rails are formed as U-section channels to

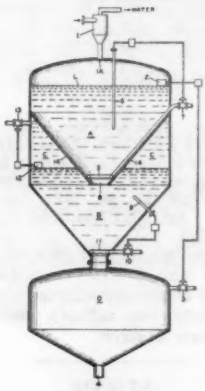


receive the workpieces between their flanks, which are provided with adjustable spacers in order to maintain an exact positioning of the workpieces.

3,738,929
HYDROCARBON EXTRACTION

Ruel C. Terry and Robert E. Lane, Houston, Tex., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Mar. 26, 1971, Ser. No. 128,421
Int. Cl. C10g *1/04*
U.S. Cl. 208—11 **6 Claims**



Continuous extraction of hydrocarbons from asphaltic or bituminous materials, such as "tar sands," within a pressurised vessel at elevated temperatures.

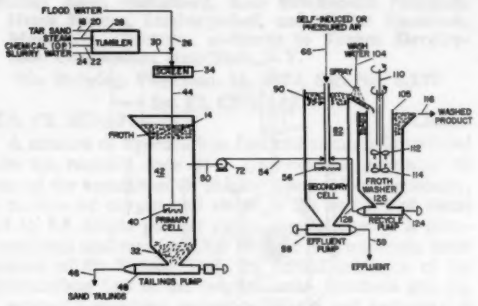
3,738,930
SECONDARY FROTH WASH

Victor Paul Kaminsky, Edmonton, Alberta, Canada, assignor to Canada-Cities Service, Ltd., Imperial Oil Limited, Atlantic Richfield Canada, Ltd., and Gulf Oil Canada Limited, fractional part interest to each

Filed Mar. 2, 1972, Ser. No. 231,349
Int. Cl. C10g *1/04*
U.S. Cl. 208—11 **6 Claims**

Disclosed herein is a process to reduce the amount of solids in a secondary froth to a level which is economical by subjecting the secondary froth to a water washing operation wherein the froth is deaerated, collapsed and subjected to intimate contacting with fresh

hot water. The contacting causes the bitumen contained within the froth to allow the release of the solids en-



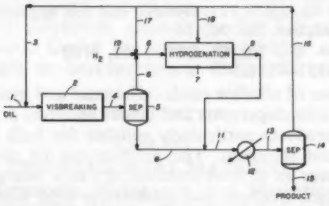
trained within the bitumen, the water to separate from the bitumen, and the recovery of bitumen from the secondary froth.

3,738,931

METHOD FOR TREATING SYNTHETIC CRUDE OIL FOR POUR POINT REDUCTION

John H. Frankovich, Burbank, Ill., and Donald K. Wunderlich, Richardson, Tex., assignors to Atlantic Richfield Company, New York, N.Y.

Filed May 13, 1971, Ser. No. 143,098
Int. Cl. C10g *37/06*
U.S. Cl. 208—67 **3 Claims**



A method is provided for treating synthetic crude oil to reduce its pour point and to stabilize the reduced pour point by visbreaking the crude oil in the presence of hydrogen so that from about 50 to about 200 s.c.f. of hydrogen is consumed per barrel of oil treated, separating vapors from the visbroken oil under conditions of temperature and pressure which are not substantially different from the conditions of the visbreaking operation, hydrogenating the vaporized portion of the visbroken oil, and combining at least part of the unvaporized oil with at least part of the hydrogenated vaporized visbroken oil to provide an oil product suitable for conventional storage, transportation, and the like.

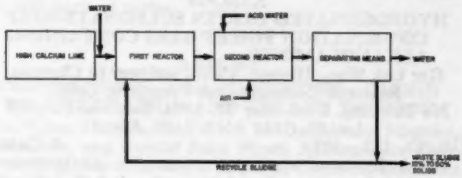
3,738,932

METHOD FOR TREATING ACID WATER CONTAINING METALLIC VALUES

Paul D. Kostenbader, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Apr. 19, 1971, Ser. No. 135,292
Int. Cl. C02c *5/04*
U.S. Cl. 210—46 **13 Claims**

Method for treating acid water containing metallic values, for example AMD and diluted waste pickle liquor, in which the acid water is treated with an alkali-water slurry, for example, high calcium lime, mixed with a portion of the sludge formed in the method. The alkali-water slurry and sludge are mixed in a first reactor for a time to obtain a uniform mix, prior to treating the acid water. The alkali-water slurry and sludge mix and the acid water flow to a second reactor. Air can be introduced into the second reactor. The acidity of the water is neutralized and a substantial portion if not all of the metallic values are oxidized and precipitated as solids. The



mixture in the second reactor flows to a separating means wherein the precipitated solids settle out and form a sludge. The sludge contains about 15 percent to about 50 percent solids. To achieve the results of the invention it is necessary to recycle a portion of the sludge formed in the method. About 20 pounds of solids in the sludge are required for each pound of solids precipitated from the acid water. The treated water can be recycled in the plant or can be discharged into environmental surface water without danger of polluting same.

3,738,933

PROCESS FOR THE REDUCTION OF THE BIOCHEMICAL OXYGEN DEMAND OF SEWAGE, AND FOR THE RECOVERY OF THE INHERENT PROTEIN

Janos Hollo, Jeno Toth, and Istvan Zagyvai, Budapest, Hungary, assignors to Tatabanyai Szenbanyak, Tatabanya, Hungary

No Drawing. Filed Dec. 3, 1970, Ser. No. 94,957
Claims priority, application Hungary, Dec. 15, 1969, TA-1,035
Int. Cl. C02c *5/02*
U.S. Cl. 210—53 **4 Claims**

The biochemical oxygen demand of sewage of the type of meat, dairy and fermentation waste, is reduced by adding to the sewage at least 120 g./m.³ of a water soluble aluminum salt or bivalent or trivalent iron salt, 0.5 to 1 kfi./m.³ of bentonite or kaolin and 5 to 10 g./m.³ of polymers or copolymers of acrylic acid-acrylic amide in the form of an aqueous solution. The suspension is stirred and the pH adjusted to exceed 10 by addition of a basic calcium compound such as lime milk or calcium hydroxide. The precipitate thus obtained is separated by setting and transferred to a conical tank for treatment with carbon dioxide until the pH is no higher than 7, and the resulting precipitate is filtered and sterilized at a temperature above 130° C. under pressure, to produce a biochemical culture medium or animal feed.

3,738,934

OIL BASE DRILLING FLUID COMPOSITION AND PROCESS

William C. Browning and Billy G. Chesser, Houston, and Jerry L. Wood, Cypress, Tex., assignors to Milchem Incorporated, Houston, Tex.

Continuation-in-part of abandoned application Ser. No. 857,384, Sept. 12, 1969. This application June 17, 1971, Ser. No. 153,985
Int. Cl. C10m *1/28*
U.S. Cl. 252—8.5 P **8 Claims**

This invention relates to an oil base drilling fluid composition, additive, and filter cake which is effective at high temperatures and pressures and which is easily and economically formed by dispersing particles of an oil and water insoluble vinyl toluene-acrylate copolymer resin

which is obtained by reacting (a) vinyl toluene, with (b) an acrylate moiety, selected from the class consisting of methyl, ethyl, 2-ethyl-hexyl, butyl, dodecyl acrylates, and methacrylates, in a water-in-oil emulsion. In a preferred embodiment lignite, including mined lignite, oleophilic lignite or mixtures thereof, together with said copolymer resin has particular utility for high temperature drilling conditions.

3,738,935

HYDROGENATED OLEFIN SULFONATE-SOAP COMBINATION TOILET BARS CONTAINING ALKANOLAMINES

Gar Lok Woo, Tiburon, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed May 27, 1971, Ser. No. 147,703
Int. Cl. C11d *9/30, 9/46, 17/00*
U.S. Cl. 252—117 5 Claims

The inclusion of a minor portion of trialkanolamines in combination with sodium hydrogenated olefin sulfonate detergent and soap bars which contain more than 5% by weight of inorganic salt prevents blotching of the bar surfaces.

3,738,936

FERROELECTRIC AND PIEZOELECTRIC COMPOSITION

Mitsuo Osada and Osamu Kumon, Osaka, and Tatsuya Nishimoto, Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation-in-part of application Ser. No. 712,192, Mar. 11, 1968. This application Mar. 4, 1971, Ser. No. 121,083
Claims priority, application Japan, Jan. 8, 1968, 43/1,030
The portion of the term of the patent subsequent to Dec. 28, 1988, has been disclaimed
Int. Cl. C04b *35/46, 35/48*
U.S. Cl. 252—62.9 8 Claims

Ferroelectric and piezoelectric compositions consisting essentially of a solid solution of the ternary system

$$X—Pb(InNb)_{0.5}O_3—Y—(PbZrO_3)—Z—(PbTiO_3)$$

wherein from 0 to 25 atomic percent of the Pb^{+2} is replaced by an alkaline earth metal is disclosed. The constituents are defined by the formula

$$X+Y+Z=100$$

wherein X, Y and Z are in the following ranges, taken with reference to the figure ABCDEFGH in FIG. 1:

	X	Y	Z
A	75	0	25
B	60	10	30
C	10	60	30
D	5	55	40
E	5	45	50
F	15	30	55
G	35	10	55
H	55	0	45

Also disclosed is a binary system consisting of from 55 to 75 mole percent $Pb(InNb)_{0.5}O_3$ and from 45 to 25 mole percent $PbTiO_3$ wherein from 0 to 25 atomic percent of the Pb^{+2} is replaced by an alkaline earth metal.

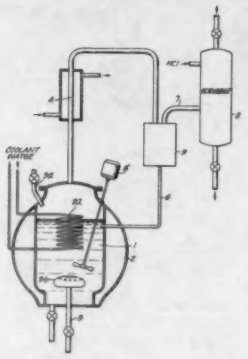
3,738,937

POLYALKYLENE POLYAMINO POLYKIS METHYLENE PHOSPHONIC ACIDS AND SALTS THEREOF AND METHODS FOR PRODUCING SAME

George J. Kautsky, Los Angeles, Calif., assignor to Textilana Corporation, Hawthorne, Calif.

Filed May 8, 1970, Ser. No. 35,844
Int. Cl. C02b *5/06*
U.S. Cl. 252—180 23 Claims

This invention relates to polyalkylene polyamino polykis methylene phosphonic acids and their salts and to methods of preparing the same substantially free of analogues thereof, in which amine radicals contain unsubstituted primary or secondary amine hydrogen, and to the process for using the same.



3,738,938

CARBONATE COMPOSITION AND PROCESS

Robert C. Barrett, Cartersville, Ga., assignor to Chemical Products Corporation, Cartersville, Ga.

Original application Feb. 29, 1968, Ser. No. 709,441, now Patent No. 3,615,811. Divided and this application Sept. 29, 1970, Ser. No. 76,416
Int. Cl. C09c *1/02, 3/02*
U.S. Cl. 252—188.3 12 Claims

Mixtures of alkaline earth carbonates and metal oxides, together with dispersants and binder additives are dried to provide products particularly suitable for bulk handling, storage and shipment. The product can be prepared in such manner as to have excellent dry-flow characteristics, good pellicle strength and moderately high bulk density, while retaining the small particle size of the individual crystallites of which the dried pellicles are formed. The products may be particularly adapted for use in ceramic industries and/or may be adapted for use in aqueous suspensions, in which cases they are provided with ready dispersibility and high reactivity.

3,738,939

PROCESS FOR RECLAIMING PHOSPHORS FROM USED (SPENT) SLURRIES AND RELATED AREAS

David Single, Chicago, Ill., assignor to Motorola Inc., Franklin Park, Ill.

Continuation-in-part of abandoned application Ser. No. 786,927, Dec. 26, 1968. This application Jan. 26, 1971, Ser. No. 109,919
Int. Cl. B01j *9/14;* C09k *1/12*
U.S. Cl. 252—301.6 S 3 Claims

A spent (phosphor) slurry used in the manufacture of a color cathode ray tube is processed for reuse by a sequence of steps including the washing with water of a sludge containing the phosphor and water soluble and insoluble conglomerates, and mixing therewith a sulphonic acid derivative. The sulphonic acid derivative acts as a de-adherent to break up the conglomeration into products which are removed by washing, leaving the reclaimed phosphor.

3,738,940

METHOD OF OPERATING A BURNER FOR THE PARTIAL OXIDATION OF HYDROCARBONS TO SYNTHESIS GAS

Werner Auer, Heidelberg, Karl Buschmann, Neustadt, Heinz Hauser, Limburgerhof, and Walter Knobloch, Mannheim, Germany, assignors to Texaco Development Corporation, New York, N.Y.

No Drawing. Filed Jan. 26, 1970, Ser. No. 5,937

Int. Cl. C07c *1/02*

U.S. Cl. 252—373 3 Claims

A mixture of hydrocarbon fuel and steam is introduced into the reaction zone of a synthesis gas generator by way of the annulus of an annular burner. Simultaneously, a mixture of oxygen and steam in the amount of about 0.5 to 5.5 weight percent steam (basis oxygen) is introduced into said reaction zone through the concentric inner conduit of the burner. Then, by partial oxidation of the hydrocarbon fuel in the reaction zone, synthesis gas, i.e. a mixture comprising carbon monoxide and hydrogen, is produced.

3,738,941

ORGANIC FLUIDS OF THE BORATE-GLYCOL TYPE

John Frederick Collins, East Grinstead, England, assignor to United States Borax & Chemical Corporation, Los Angeles, Calif.

No Drawing. Filed Mar. 3, 1971, Ser. No. 120,723

Claims priority, application Great Britain, Mar. 10, 1970, 11,340/70

Int. Cl. C23f *11/10, 11/18*

U.S. Cl. 252—389 6 Claims

Condensation products produced by reaction of an alkali metal on alkaline earth metal borate with a glycol having at least seven carbon atoms or mixtures of such glycols with polyhydric alcohols having 3 to about 8 carbon atoms. Useful as corrosion-inhibiting additives for hydraulic or heat-exchanging fluids such as brake fluids.

3,738,942

LIQUID CRYSTAL MATERIAL

Shoichi Matsumoto, Yokohama, and Masahiro Kawamoto, Kamakura, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Aug. 31, 1971, Ser. No. 176,472

Claims priority, application Japan, Sept. 9, 1970, 45/78,453

Int. Cl. G01n *31/00*

U.S. Cl. 252—408 9 Claims

A mixed nematic liquid crystal material prepared by mixing p-[N-(p-methoxy benzylidene)amino]phenyl 2-ethyl hexanoate with one or more liquid crystal materials such as a fatty acid ester of p-[N-(p-alkoxy benzylidene) amino]phenol, alkyl p-(p-alkoxy phenoxy carbonyl)phenyl carbonate, or p-[N-(p-alkoxy benzylidene)amino]-n-alkyl benzene.

3,738,943

BIODEGRADABLE DETERGENT FOR AUTOMATIC CAR WASH SYSTEMS

Thomas M. Kaneko, Trenton, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Filed Dec. 18, 1970, Ser. No. 99,522

Int. Cl. C11d *1/22, 3/065, 3/48*

U.S. Cl. 252—540 10 Claims

Biodegradable detergent for automatic car wash systems, and in particular "tunnel-type" car wash systems, consists essentially of: (a) from about 5 to 12 parts by weight of a nonionic surfactant, (b) from about 2 to 7 parts by weight of an anionic surfactant which is the phosphate ester of nonionic (a), (c) from about 2 to 10 parts by weight of linear alkylbenzene sulfonate anionic surfactant, (d) from about 0 to 10 parts by weight of detergent builder, (e) from about 0 to 2.0 parts by weight of alkali, and (f) from about 91 to 59 parts by weight of water, based on 100 parts by weight of detergent. This detergent is efficaciously deployed in very dilute concentrations in aqueous solutions of up to 1 part of detergent per 400 parts of water.

3,738,944

COMPOSITIONS FOR INITIATING OLEFIN POLYMERISATION AND THE USE THEREOF

John Paton Candlin, Frodsham, James Edward Maguire, Runcorn, and Ronald John Wyatt, Ashton, near Chester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Mar. 1, 1971, Ser. No. 119,894

Claims priority, application Great Britain, Mar. 3, 1970, 10,142/70

Int. Cl. B01j *11/84*

U.S. Cl. 252—431 R 6 Claims

A transition metal composition useful for polymerising olefins, which is formed by the reaction of (1) a material insoluble in organic solvent having surface hydroxyl groups free from adsorbed water; (2) a transition metal compound having at least one hydrocarbyl ligand, the transition metal being selected from those of Groups IV–A and V–A of the Periodic Table of Elements; and (3) a compound of a metal of Groups I to III of the said Periodic Table having at least one hydrocarbyl ligand. The composition is useful in the polymerisation and copolymerisation of olefinically unsaturated monomers, especially ethylene.

3,738,945

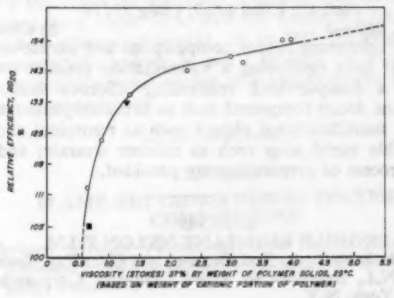
POLYQUATERNARY FLOCCULANTS

Hans Peter Panzer, 150 Old N. Stamford Road, Stamford, Conn. 06905, and Kenneth Wayne Dixon, 58 Newton Ave., Norwalk, Conn. 06851

Continuation-in-part of abandoned application Ser. No. 115,556, Feb. 16, 1971. This application Feb. 4, 1972, Ser. No. 223,622

Int. Cl. C02b *1/20*; C08g *25/00, 30/16*

U.S. Cl. 260—2 BP 20 Claims



Polyquaternary flocculants of average molecular weight, in excess of 10,000 are prepared by reacting a secondary amine with an epihalohydrin or diepoxide for use in flocculation of aqueous systems where ordinary cationic flocculants cannot be used.

3,738,946
CONVERSION OF SCRAP POLYURETHANE FOAM TO POLYOL

Floro F. Frulla, Wallingford, Alec Odinak, New Haven, and Adnan A. R. Sayigh, North Haven, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Aug. 5, 1971, Ser. No. 169,468
Int. Cl. C08f *37/24*; C08g *53/22*
U.S. Cl. 260—2.3 **8 Claims**

A process is disclosed for converting scrap polyurethane into a polyol which is re-usable without the need for purification in the preparation of polyurethane foam. The process comprises heating the scrap at about 175° C. to about 250° C. (preferably at 185 to 225° C.) in the presence of a dihydroxy compound consisting of (i) from 100 percent to 90 percent by weight of an aliphatic diol having from 2 to 6 carbon atoms, inclusive, and having a boiling point above about 180° C. and (ii) from 0 percent to 10 percent by weight of a dialkanolamine having from 4 to 8 carbon atoms, inclusive. The process is particularly advantageous in the recovery of useful polyols from scrap rigid polyurethane foams derived from a polymethylene polyphenyl polyisocyanate and a polyol obtained by reaction of propylene oxide with a mixture of polymethylene polyphenyl polyamines produced by acid condensation of aniline and formaldehyde.

3,738,947
PROCESS FOR MAKING FLAME RETARDED POLYURETHANE FOAM

John Fishbein, Marlowe, Raymond W. H. Bell, Great Kings Hill, and Anthony J. Clarke, Chinnor, England, assignors to Dunlop Holdings Limited, London, England

No Drawing. Filed Jan. 19, 1970, Ser. No. 4,041
Claims priority, application Great Britain, Jan. 31, 1969, 5,455/69
Int. Cl. C08g *22/44*
U.S. Cl. 260—2.5 AM **4 Claims**

Flame-resistant polyurethane foams are obtained by incorporating in the foam-forming reaction mixture a halogen-substituted aromatic amine having not more than one benzene ring, for example 4-chloro-m-phenylene diamine or p-chloro-aniline. The invention is particularly applicable to flexible foams of low density in respect of which it is possible to obtain foams which are self-extinguishing when exposed to flame.

3,738,948
RUBBER COMPOSITIONS

Donald D. Dunnom, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,425
Int. Cl. C08d *9/10*; C08g *37/10*
U.S. Cl. 260—3 **23 Claims**

Fiber reinforced rubber compositions and particularly vehicular tires employing a vulcanization product comprising a finely-divided reinforcing siliceous filler, a methylene donor compound such as hexamethylene tetramine, a multifunctional phenol such as resorcinol and a compatible metal soap such as calcium stearate; and a novel process of preparation are provided.

3,738,949
PINHOLE RESISTANT NYLON FILM

Elliott A. Schonberg, East Orange, and Geza Pap, Irvington, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation of application Ser. No. 47,123, June 17, 1970, which is a continuation-in-part of application Ser. No. 746,766, July 23, 1968, now abandoned. This application Feb. 18, 1972, Ser. No. 227,646
Int. Cl. C08g *51/56, 51/62*
U.S. Cl. 260—18 N **3 Claims**

A self-supporting, pinhole resistant polycaproamide film comprising polyepsilon caprolactam resin having a water content of 0.04 to 0.12% by weight, epsilon caprolactam monomer present in an amount of 4 to 6% by weight, and heat stabilizer comprising 40 to 50 p.p.m. cupric chloride and 0.20 to 0.30% by weight potassium iodide.

3,738,950
POLYAMIDES MODIFIED WITH ADIPIC ACID AND PROCESS FOR THEIR PREPARATION

Robert J. Sturwold and Hubert J. Sharkey, Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

No Drawing. Filed June 14, 1971, Ser. No. 153,097
Int. Cl. C08g *20/20*
U.S. Cl. 260—18 N **8 Claims**

This invention relates to useful polymeric fat acid polyamide compositions modified with adipic acid and a method for their preparation. The adipic acid-modified polyamide resins are derived from polymeric fat acids and piperazine or piperazine derivatives and have an excellent balance of physical properties, softening point and adhesive properties making them suitable for hot melt bonding of vinyl-based substrates.

3,738,951
NONSMEARING ERASER ELASTOMER COMPOSITIONS

Terence C. Middlebrook, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

No Drawing. Filed July 24, 1970, Ser. No. 58,157
Int. Cl. C08d *9/14*
U.S. Cl. 260—23.7 M **6 Claims**

Eraser formulations which are nonsmearing and do not require cure are disclosed, these comprising a block polymer, a vulcanized vegetable oil, a naphthenic oil and, optionally, conventional fillers, dyes, abrasives and the like.

3,738,952
STABILIZED SHELLAC SEALING COATING FOR TABLETS

Charles A. Signorino, King of Prussia, Pa., assignor to Colorcon Incorporated, West Point, Pa.

No Drawing. Continuation of application Ser. No. 823,514, May 9, 1969. This application Dec. 6, 1971, Ser. No. 205,436
Int. Cl. A61k *9/00*
U.S. Cl. 260—27 R **6 Claims**

A stabilized shellac sealing coating for tablets and the like comprising shellac and polyvinylpyrrolidone, said shellac having free carboxyl groups, said polyvinylpyrrolidone having free basic groups, the ratio by weight of the shellac free carboxyl groups to the polyvinylpyrrolidone free basic groups being about 1 to 1. A method of making a stabilized shellac sealing film for coating tablets and the like comprising taking a desired quantity of shellac, titrating a specimen of the shellac to ascertain the number of moles of acid in the shellac, adding to the shellac a quantity of polyvinylpyrrolidone having the same number of moles of base, and mixing the shellac and polyvinylpyrrolidone together in a solvent.

3,738,953
SYNERGISTIC FIRE RETARDANT FOAMS

Carlos J. Anorga, Carson, Samuel Chess, Palos Verdes Estates, and Theodore B. Lefferdink, Carson, Calif., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Dec. 6, 1971, Ser. No. 205,380
Int. Cl. C08g *22/44*
U.S. Cl. 260—2.5 AJ **12 Claims**

Flexible polyurethane foams are described which have outstanding flame retardant properties. The foams are the product of reaction, under foam producing conditions,

of a combination of (a) a mixture of toluene diisocyanate and polymethylene polyphenyl isocyanate; (b) a polyether polyol; (c) antimony oxide; (d) a polyhalogenated aromatic compound or a polybrominated diol; and (e) a highly chlorinated hydrocarbon polymer. The foams meet the very stringent tests for fire retardance required of seat cushioning, mattresses, and like materials in aircraft, institutions such as hospitals, convalescent homes and the like.

3,738,954

VINYL ESTER/ISOBUTENE COPOLYMER DISPERSION

Francis Paul Gintz, Sutton, England, assignor to BP Chemicals (U.K.) Limited, London, England

No Drawing. Continuation of application Ser. No. 695,850, Jan. 5, 1968. This application Jan. 18, 1971, Ser. No. 107,452

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 R **6 Claims**

A process for the production of film forming aqueous dispersions of copolymers of vinyl esters of organic acids and isobutene having low residual monomer content, the process comprising copolymerising a vinyl ester of an organic acid (e.g. vinyl acetate) and isobutene in aqueous dispersion until 65 to 95 percent by weight of the total monomer charge is converted to polymer and then removing unpolymerised isobutene and continuing polymerisation of residual vinyl ester.

3,738,955

IMPERMEABLE BUILDING MATERIAL

Keith B. Bozer and Lloyd H. Brown, Crystal Lake, and Daniel S. P. Eftax, Barrington, Ill., assignors to The Quaker Oats Company, Chicago, Ill.

No Drawing. Filed Feb. 3, 1971, Ser. No. 112,486

Int. Cl. C08g *51/04*

U.S. Cl. 260—39 R **14 Claims**

A process for producing an impermeable bound aggregate building material composition comprising: (a) forming a monomeric binder mixture of specified amounts of monomeric furfuryl alcohol and a silane coupling agent of the general formula:

$$X—R'—Si—(OR'')_3$$

wherein R' is a short chain alkylene radical; R'' is aryl, alkyl, substituted aryl, or furfuryl; and X is amino, mercapto, epoxy, or glycidoxy; (b) forming a mixture of specified amounts of aggregate and acidic catalyst; (c) admixing specified amounts of the monomeric binder with specified amounts of the aggregate-acidic catalyst mixture; and (d) admixing specified amounts of clay with the bound aggregate.

3,738,956

POLYVINYL CHLORIDE COVERING FOR A PLANT ENCLOSURE CONTAINING SURFACE ACTIVE AGENTS TO MODIFY WATER-CONDENSATE DROPLET CONTACT ANGLE

Flaviano Glatti, Mestre, and Pierantonio Sanmartin, Padova, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed Apr. 8, 1970, Ser. No. 26,646

Claims priority, application Italy, Apr. 10, 1969, 15,342/69

Int. Cl. A01g *9/00*; C08f *45/02, 45/66*

U.S. Cl. 260—41 R **1 Claim**

A method of controlling plant growth which involves enclosing the growth site in a structure having a translucent covering of synthetic-resin containing surface-active agents to reduce the contact angle of water droplets formed thereon from vapor condensation less than 75° and preferably lower than a critical L-value wherein L is the contact angle and

$$\sin L = \frac{n_2}{n_1}$$

n_2 and n_1 being the indices of air and water respectively.

3,738,957

COACERVATES OF POLYVINYL ALCOHOL AND COLLOIDAL SILICA

Ralph K. Iler, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 18, 1971, Ser. No. 125,719

Int. Cl. C08f *45/04*

U.S. Cl. 260—41 A **7 Claims**

Coacervates of polyvinyl alcohol and colloidal silica having the average particle diameter of 4–50 nanometers are formed in good yields within the pH range of 1.5–4.5 and with the silica/polyvinyl alcohol ratio such that a monomolecular layer of polyvinyl alcohol can be formed on the silica surface. The concentration of polyvinyl alcohol is such that there are 1–5 alcoholic hydroxyl groups per square nanometer of silica surface. Such coacervates are useful as insolubilizers and extenders for polyvinyl acetate emulsions, as a source of fine silica powders that can be used as adsorbents for vapors or as a source of colloidal silica dispersible in water-miscible organic solvents.

3,738,958

SYNERGISTIC FLAME RETARDING COMPOSITION FOR POLYPROPYLENE OF 1,2,3,4,5-PENTABROMO - 6 - CHLOROCYCLOHEXANE, TETRABROMOPHTHALIC ANHYDRIDE AND ANTIMONY TRIOXIDE

Henry N. Paul 3rd, Blue Bell, Pa., assignor to Thiokol Chemical Corporation, Bristol, Pa.

Continuation-in-part of abandoned application Ser. No. 126,815, Mar. 22, 1971. This application Feb. 10, 1972, Ser. No. 225,233

Int. Cl. C08f *45/59*

U.S. Cl. 260—45.75 B **11 Claims**

Self-extinguishing compositions are obtained from normally flammable polypropylene materials by the addition of a synergistic acting flame retarding composition containing from about 20 to 60% by weight 1,2,3,4,5-pentabromo-6-chlorocyclohexane, 30 to 70% by weight tetrabromophthalic anhydride and 1 to 30% by weight antimony trioxide based on the total weight of the flame retarding composition.

3,738,959

FLAME-RETARDED OLEFIN POLYMER COMPOSITIONS

Christos Savides, Piscataway, and Peter Vincent Susi, Middlesex, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed May 22, 1972, Ser. No. 255,493

Int. Cl. C08f *45/60*

U.S. Cl. 260—45.75 **10 Claims**

Flame-retarded compositions comprising an olefin polymer having incorporated therein (1) ethylenebis[tris(2-cyanoethyl)]phosphonium bromide, (2) ammonium poly-

phosphate, (3) titanium dioxide or silicon dioxide and (4) a compound having an —Si— linkage therein, are disclosed.

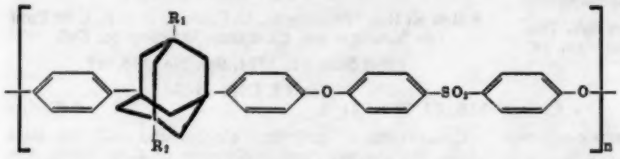
3,738,960

POLYSULFONE POLYMERS FROM ADAMANTANE BISPHENOLS

Robert M. Thompson, Wilmington, Del., and Irl N. Duling, West Chester, Pa., assignors to Sun Research and Development Co., Philadelphia, Pa.

No Drawing. Filed Dec. 30, 1971, Ser. No. 214,429
Int. Cl. C08g *23/00, 51/46*
U.S. Cl. 260—49 7 Claims

Novel solid polysulfones having the structure:



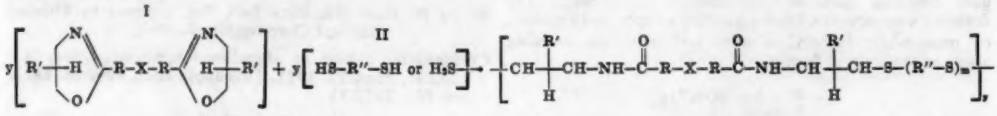
where R_1 and R_2 are hydrogen or hydrocarbyl radicals having 1 to 20 carbon atoms and n represents the number of such repeating units which are produced. These thermoplastic resins have exceptional oxidation stability, chemical inertness and high heat distortion temperatures and are useful in the manufacture of molded and extruded products.

3,738,961

COPOLYMERS OF BIS-OXAZOLINES AND DITHIOL COMPOUNDS AND PROCESS FOR THEIR PREPARATION

Donald A. Tomalia and Bruce P. Thill, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application June 16, 1969, Ser. No. 833,759. Divided and this application Dec. 9, 1970, Ser. No. 96,626
Int. Cl. C08g *20/00*
U.S. Cl. 260—47 CZ 9 Claims

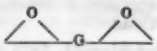


wherein

R=alkylene, arylene or arylalkylene
R′=hydrogen or lower alkyl
R″=alkylene, arylene, arylalkylene, cycloalkylene, or substituted cycloalkylene groups
X=—O— or —S—
m=0 or 1
y=molar quantity of monomers and degree of polymerization of polymers.

Also with excess of either I or II the polymer has

or —SH end groups which react with



to yield epoxy resin copolymers, when G is the moiety bridging between oxirane groups in a polyepoxide adapted to be cured to obtain an epoxy resin: and processes for making the above. The resins are adapted to be employed as adhesives, and as thermoplastic to thermoset polymers for production of plastic articles of manufacture.

3,738,962

CYANURATES OF CYANATOPHENYL-TERMINATED POLYARYLENE ETHERS

Basil L. Loudas, St. Paul, and Herward A. Vogel, Oakdale, Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

No Drawing. Original application July 1, 1968, Ser. No. 741,303. Divided and this application Mar. 8, 1971, Ser. No. 122,142
Int. Cl. C08g *23/00, 25/00*
U.S. Cl. 260—47 R 10 Claims

Cyanatophenyl-terminated polyarylene ethers are thermally polymerized to produce polyarylene ether cyanurates having outstanding strength, toughness, and flexibility and useful in adhesives, coatings, and binders.

3,738,963

PROCESS FOR THE PRODUCTION OF POLYCARBONATES

Heinz Praetorius, Lendersdorf, and Axel Vogts, Eschweiler, Germany, assignors to Akzo N.V., Arnhem, Netherlands

No Drawing. Filed Sept. 14, 1971, Ser. No. 180,508
Claims priority, application Germany, Sept. 15, 1970, P 20 45 443.7
Int. Cl. C08g *17/13*
U.S. Cl. 260—47 XA 17 Claims

A process for the production of polycarbonates wherein a di- or polyvalent alcohol which is at least partly esterified with trichloroacetic acid is heated in the presence of a basic compound at about 60° C. to 200° C., chloroform being split off and removed from the reaction. The resulting polycarbonates are especially useful, e.g. as foamed products.

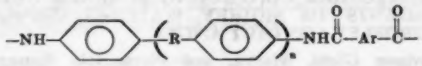
3,738,964

AROMATIC POLYAMIDES DERIVED FROM A MIXTURE OF AROMATIC DIAMINES CONTAINING 4,4-DIAMINO-OXANILIDE

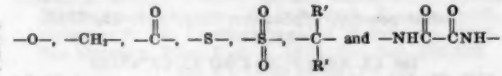
Frank Dobinson, Gulf Breeze, and Frank M. Silver, Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed May 31, 1972, Ser. No. 258,108
Int. Cl. C08g *20/20*
U.S. Cl. 260—47 CZ 6 Claims

A film- and fiber-forming aromatic polyamide comprising repeating units, wherein each unit is of the formula

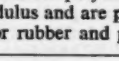


in which R represents a covalent bond or a divalent radical selected from



in which R′ is a C_1 to C_4 alkyl group, Ar represents a para- or meta-phenylene radical and n is 0 or 1, and where-

in between 10 and 90 mole percent of said units are of said formula where R is



Fibers prepared from these polyamides are thermally stable, have a high modulus and are particularly useful as reinforcing elements for rubber and plastic articles.

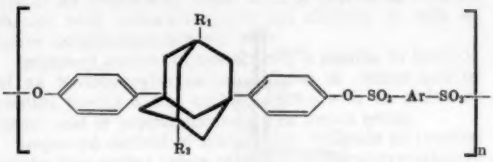
3,738,965

POLYSULFONATE POLYMERS FROM ADAMANTANE BISPHENOLS

Robert M. Thompson, Wilmington, Del., and Irl N. Duling, West Chester, Pa., assignors to Sun Research and Development Co., Philadelphia, Pa.

No Drawing. Filed Dec. 30, 1971, Ser. No. 214,419
Int. Cl. C08g *25/00*
U.S. Cl. 260—49 **10 Claims**

Novel solid polysulfonates having the structure:



where R_1 and R_2 are hydrogen or hydrocarbyl radical having 1 to 20 carbon atoms, Ar represents a divalent aromatic hydrocarbon radical and *n* represents the number of such repeating units which are produced. These thermoplastic resins are valuable in the manufacture of molded and extruded articles.

3,738,966

PROCESS FOR THE MANUFACTURE OF LINEAR HIGH POLYMERIC POLY-N-ALKYLHYDRAZIDES

Josef Studinka, Zurich, and Rudolf Gabler, Uitikon, Switzerland, assignors to Inventa A.G. fur Forschung und Patentverwertung, Zurich, Switzerland

No Drawing. Filed Oct. 19, 1971, Ser. No. 190,677
Claims priority, application Switzerland, Oct. 29, 1970, 15,982/70
Int. Cl. C08g *20/20, 33/04*
U.S. Cl. 260—65 **10 Claims**

A process for the manufacture of a linear high polymeric poly-N-alkylhydrazide wherein a hydrazine is condensed in chlorosulphonic acid at an elevated temperature with an aromatic dicarboxylic acid diester. The hydrazine optionally has a lower alkyl substitution at one of its hydrogen atoms.

3,738,967

POLYAMIDES FROM BIS-MALEIMIDES AND H_2S

James V. Crivello, Mechanicville, N.Y., assignor to General Electric Company, Schenectady, N.Y.

No Drawing. Filed July 16, 1971, Ser. No. 163,408
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 UA **12 Claims**

Polyimide compositions are obtained by the reaction of a bis-imide and hydrogen sulfide. The resulting polymeric compositions have physical properties which make them suitable in coating, insulating, and molding applications.

3,738,968

COPOLYAMIDES OF 9,9-BIS(3-AMINOPROPYL)-FLUORENE

James S. Ridgway, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 752,498, Aug. 14, 1968. This application Oct. 15, 1970, Ser. No. 81,116
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R **3 Claims**

High shrinkage polymers useful in production of hosiery and crimpy conjugate yarns are provided by linear copolyamides of at least one aliphatic dicarboxylic acid such as adipic acid, at least one aliphatic diamine such as hexamethylene diamine and 9,9-bis(3'-aminopropyl)fluorene. Even greater shrinkage results when a portion of the aliphatic dicarboxylic acid is replaced with an aromatic dicarboxylic acid such as terephthalic acid.

3,738,969

POLYIMIDES

Fred F. Holub, Schenectady, and Denis R. Pauze, Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

No Drawing. Original application Apr. 25, 1969, Ser. No. 819,445. Divided and this application Apr. 30, 1971, Ser. No. 139,212
Int. Cl. C08g *20/20;* **C08f** *31/04*
U.S. Cl. 260—874 **5 Claims**

Improved products are obtained from the polymerization of mixtures of mono-imides and bis-imides. The compositions thus obtained have improved physical properties and heat resistance making them especially suitable in various coating, insulating and molding applications.

3,738,970

POLYVINYL CHLORENDATES

Dennis J. Cimino and John W. Mench, Rochester, and Leonidas H. Pancoast, Jr., Churchville, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed July 24, 1972, Ser. No. 274,536
Int. Cl. C08f *27/12*
U.S. Cl. 260—78.4 D **5 Claims**

Polyvinyl chlorendates of a wide range of combined chlorendyl and method of making polyvinyl chlorendates by reacting polyvinyl alcohol with up to about 125 percent of the stoichiometric amount of chlorendic anhydride.

3,738,971

INTERPOLYMERS OF ACRYLATES, UNSATURATED ACIDS AND HYDROXYLATED AMIDES AS PRESSURE-SENSITIVE ADHESIVES

Alfred M. Coffman, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed Sept. 7, 1971, Ser. No. 178,462
Int. Cl. C08f *15/00*
U.S. Cl. 260—80.73 **6 Claims**

Pressure-sensitive adhesives having an excellent balance of tack and strength are prepared by polymerizing together (1) a major amount of an alkyl acrylate wherein the alkyl group contains at least 6 carbon atoms, (2) a minor amount of an α,β-olefinically unsaturated carboxylic acid, and (3) a small amount of an α,β-olefinically unsaturated hydroxylated amide and (4) optionally an alkyl acrylate wherein the alkyl group contains 4 to 5 carbon atoms. The pressure-sensitive adhesives are particularly useful as transparent tape adhesives.

3,738,972

PROCESS FOR PRODUCTION OF STYRENE/ACRYLONITRILE COPOLYMERS

Kizyu Moriyama and Sakae Takahashi, Osaka, Japan, assignors to Daicel Ltd., Osaka, Japan

No Drawing. Filed Aug. 26, 1971, Ser. No. 175,378
Claims priority, application Japan, Aug. 28, 1970, 45/75,409
Int. Cl. C08f *15/04, 15/22*
U.S. Cl. 260—85.5 R **2 Claims**

Suspension polymerization of a styrene-acrylonitrile polymerization mixture is carried out while adding styrene to the polymerization mixture until the conversion of monomers to copolymer reaches 40 to 70%. An inert gas is passed through the polymerization system after the conversion has reached 75 to 85% to remove excess acrylonitrile, whereby there is obtained a styrene-acrylonitrile copolymer having a uniform homogenous composition.

3,738,973

FUROIC ACID ESTERS OF HYDROXY-CONTAINING POLYMERS

Sidney Augarten, Bronx, Kailash C. Pande, Farmingdale, and Stanley E. Kallenbach, Roslyn Heights, N.Y., assignors to Powers Chemco, Inc., Glen Cove, N.Y.

No Drawing. Filed Jan. 7, 1971, Ser. No. 104,804
Int. Cl. C08f *15/02;* C08g *17/14;* G03c *5/00*
U.S. Cl. 260—88.1 P 5 Claims

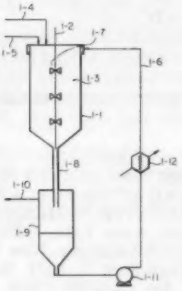
Light-sensitive film forming polymers are disclosed which comprise recurring units of furoate-esterified polymeric alcohols selected from phenoxy resins, polyesters and styrene-allyl alcohol copolymers. The utilization of these photosensitive materials in photolithography and photomechanical processes is also described.

3,738,974

LIQUID PHASE PROCESS FOR THE POLYMERIZATION OF UNSATURATED MONOMERS

Masaaki Takehisa, Shiro Senrui, Hirondo Kurihara, Yoshio Maruyama, Hiromasa Watanabe, Hayato Nakajima, Masamichi Touhei, and Takeo Simada, Takasaki, Takesi Suwa, Sawa-gun, Yoshio Takasaka, Yokkaichi, and Hideyuki Hashiba, Itami, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Nov. 16, 1970, Ser. No. 89,846
Claims priority, application Japan, Nov. 20, 1969, 44/92,469
Int. Cl. C08f *1/16, 1/60, 1/98*
U.S. Cl. 260—89.5 AW 11 Claims



In a process for polymerizing a monomer or monomers selected from an olefin and a vinyl monomer in the presence of an aqueous organic medium, adherence of the resulting polymer to the inside walls of the polymerization reactor is prevented by having a particular medium composition flow down in such a manner that said composition covers said inside walls. Said composition comprises a small amount of a monomer or monomers and a mixture consisting of substantially the same components as said aqueous organic medium. Said composition may typically be represented by a composition comprising a small amount of an olefin and/or a vinyl compound, water, and an organic medium such as a lower-alkanol, which is in physico-chemical equilibrium state with a reaction composition comprising an olefin and/or a vinyl compound, said organic medium and a small amount of water.

3,738,975

PROCESS FOR IMPROVING THE THERMAL STABILITY OF POLYVINYL ALCOHOL WITH A CYCLIC POLYCARBOXYLIC ACID

John E. Bristol, Niagara Falls, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Mar. 2, 1972, Ser. No. 231,364
Int. Cl. C08f *27/16*
U.S. Cl. 260—91.3 PV 6 Claims

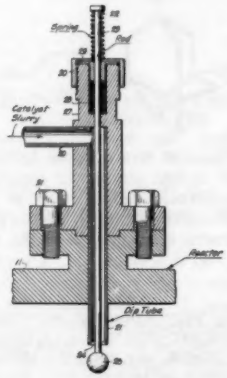
The thermal stability of polyvinyl alcohol containing an alkali metal acetate is improved by mixing a sufficient amount of a cyclic polycarboxylic acid selected from the group consisting of phthalic acid, terephthalic acid, isophthalic acid, and cis 4-cyclohexene dicarboxylic acid-1,2 with the polyvinyl alcohol to convert the alkali metal acetate contained with the polyvinyl alcohol to acetic acid and an alkali metal salt of the cycylic polycarboxylic acid such that when the composition is made up as a 10% solution in water, the solution has a pH of from about 3.0 to about 3.5.

3,738,976

OLEFIN CATALYST SLURRY FEEDING PROCESS AND APPARATUS

Leonard J. Heavin, Overland Park, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jan. 18, 1971, Ser. No. 107,225
Int. Cl. C08f *1/56, 1/98*
U.S. Cl. 260—93.7 3 Claims



In mono 1-olefin and diolefin processes an improved method and apparatus for introducing a catalyst slurry into the polymerization zone which comprises pressurizing a catalyst slurry through a transport zone into said polymerization zone, and thereafter passing said catalyst slurry over a convex surface positioned within said polymerization zone so as to disperse said catalyst slurry within said polymerization zone in the form of a spray.

3,738,977

POLYMERIZATION OF ETHYLENE WITH A SUPPORTED PALLADIUM CATALYST

John Biale, Placentia, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Continuation-in-part of application Ser. No. 760,724, Sept. 18, 1968. This application Apr. 22, 1971, Ser. No. 136,600
Int. Cl. C08f *1/66, 3/06*
U.S. Cl. 260—94.9 DA 5 Claims

Hydrocarbon olefins are converted to higher boiling products comprising polymers and oligomers of the olefin and alkylates of the olefin with paraffinic hydrocarbons in the presence of a Group VIII noble metal distended on a synthetic zeolite, i.e., an aluminosilicate molecular sieve, that has been pretreated with hydrogen at conditions to impart selective polymerization or alkylation activity thereto. In a specific embodiment, ethylene is polymerized to low boiling oligomers comprising dimers, trimers, tetramers, etc. by contacting the ethylene under polymerization conditions with a palladium catalyst prepared by impregnation of a palladium salt or ion exchange of palladium from a palladium salt onto a Y molecular sieve that has been pretreated with hydrogen at a temperature from about 200° to 900° F. or is polymerized to solid polymer when the hydrogen treatment is performed at a

temperature from 0° to 100° F. The ethylene is also reacted under alkylation conditions with a paraffin hydrocarbon by contacting the olefin and paraffin under alkylation conditions with a palladium deposited on a Y molecular sieve that has been pretreated by contacting with hydrogen at a temperature of from 100° to about 200° F.

3,738,978

PROCESS FOR THE MANUFACTURE OF PEPTIDES

Georg Jager, Raunheim (Main), and Rolf Geiger, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Mar. 17, 1971, Ser. No. 125,419
Claims priority, application Germany, Apr. 8, 1970, P 20 16 703.7; Feb. 4, 1971, P 21 05 150.3
Int. Cl. C07c *103/52;* **C07g** *7/00*
U.S. Cl. 260—112.5 **4 Claims**

Method of making an N-isobornyloxycarbonyl derivative of an amino acid, imino acid, or peptide by reaction thereof with isobornyloxycarbonyl chloride or with an active isobornyloxycarbonyl ester.

Improved method of synthesizing a peptide by reaction of an N-isobornyloxycarbonyl-amino or -imino acid or peptide having a free carboxy group with an amino or imino acid or peptide having a free amino group.

Improved method of synthesizing a peptide by reaction of the free amino group of N^G-di-isobornyloxycarbonyl-arginine, or of a peptide containing N^G-di-isobornyloxycarbonyl-arginine with an amino or imino acid or peptide having a free carboxy group.

3,738,979

O^2,2'-CYCLOCYTIDINE-3'-PHOSPHATE AND PROCESS FOR PRODUCING SAME

Joseph Nagyvary, Byran, Tex., assignor to the United States of America as represented by the Secretary, Department of Health, Education, and Welfare

No Drawing. Filed Oct. 23, 1969, Ser. No. 868,913
Int. Cl. C07d *51/52*
U.S. Cl. 260—211.5 **9 Claims**

A novel process for preparing O^2,2'-cyclocytidine-3' phosphate, a new compound, and aracytidine-3' phosphate, a known compound, is described.

3,738,980

ANTIBIOTICALLY ACTIVE COMPOUNDS

Hans Bickel, Binningen, and Wilhelm Kump, Therwil, Switzerland, assignors to Ciba-Geigy Corporation, Summit, N.J.

No Drawing. Filed Aug. 6, 1970, Ser. No. 61,820
Claims priority, application Switzerland, Aug. 11, 1969, 12,131/69; Dec. 8, 1969, 18,249/69
Int. Cl. C07d *41/06*
U.S. Cl. 260—239.3 P **14 Claims**

3-amino-derivatives of 25–O-desacetyl rifamycin S or 25-O-desacetyl-rifamycin SV, or of derivatives thereof at least partially hydrogenated in positions 16, 17; 18, 19; 28, 29, such as the 16, 17, 18, 19-tetrahydro or the 16, 17, 18, 19, 28, 29-hexahydro-derivatives with an aza-cycloaliphatic ring in 3-position exhibit in addition to a very good action against gram-positive microorganisms an antibacterial action against rifampicin-resistant Staphylococci and corresponding mutants of *Mycobacterium tuberculosis.*

3,738,981

TEXTILE TREATING COMPOSITIONS, PROCESS OF TREATING TEXTILES AND TEXTILE ARTICLES

Kenneth W. Graff, Hockessin, and Albert H. Sherman, Wilmington, Del., assignors to ICI America Inc., Wilmington, Del.

No Drawing. Filed Dec. 8, 1969, Ser. No. 883,347
Int. Cl. C08g *41/00, 43/00*
U.S. Cl. 260—239.3 R **7 Claims**

Disclosed are textile treating compositions comprising a novel class of carbamic acid esters containing at least one thermally labile carbamic acid ester group and containing at least one thermally stable carbamic acid ester group derived from a polyoxyethylene ether. The textile treating compositions may be applied to textile materials to improve the physical characteristics thereof; for example, anti-soiling and/or soil release characteristics.

3,738,982

1,3-DIHYDRO-1 OXOPHOSPHINYLALKYL-2H-1,4-BENZODIAZEPINE-2-ONES

Erhard Wolf, Hofheim, Taunus, Hans Kohl, Schwalbach, Taunus, and Gunter Hartfelder, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed May 6, 1971, Ser. No. 140,977
Claims priority, application Germany, May 8, 1970, P 20 22 503.0; Sept. 23, 1970, P 20 46 848.8
Int. Cl. C07d *53/06*
U.S. Cl. 260—239.3 D **9 Claims**

Oxo-phosphinyl-benzodiazepines are disclosed which have tranquilizing properties and are suitable for enteral or parenteral administration.

3,738,983

PROCESS FOR THE PREPARATION OF 3-(3β,17β-DIHYDROXYANDROST-5-EN - 17α-YL) PROPIONIC ACID γ-LACTONE

Hugh L. Dryden, Jr., Deerfield, and Joseph Wieczorek, Chicago, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Aug. 6, 1971, Ser. No. 169,876
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.57 **11 Claims**

A new process for the preparation of 3-(3β,17β-dihydroxyandrost-5-en-17α-yl)propionic acid N-lactose from dehydroisoandrosterone is described herein. The procedure makes use of a 1-(lower alkoxy)ethyl group as a protecting group for hydroxy functions in the steroid molecule. Use of such a protecting group is advantageous in that it not only improves the yields in the overall process but it also gives intermediates which are much more soluble in the solvents used so that a greater throughput of material is possible with a resultant increase in efficiency.

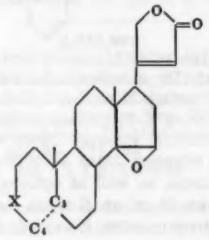
3,738,984

14,15-BETA-EPOXYCARDENOLIDES

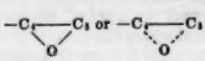
Hans-Gunter Lehmann and Georg Zollner, Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

No Drawing. Continuation of abandoned application Ser. No. 873,086, Oct. 31, 1969. This application Nov. 26, 1971, Ser. No. 202,548
Claims priority, application Germany, Nov. 4, 1968, P 18 07 585.9
Int. Cl. C07c *173/02*
U.S. Cl. 260—239.57 **3 Claims**

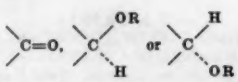
14,15β-epoxycardenolides of the formula



wherein C_4 . . . C_5 is a saturated or unsaturated carbon-carbon bond or is



and wherein X is



and wherein R is hydrogen, acyl, alkyl, a tetrahydropyranyl residue or a substituted tetrahydropyranyl residue.

The compounds are made from the corresponding steroids which, however, have an unsaturated carbon-carbon bond in the 14,15-position, which bond is subjected to epoxidation. If there is a carbon-carbon double bond also in the 4,5-position, this bond may be reduced or likewise epoxidized. A keto group present in the molecule may be reduced to hydroxyl or a free 3-hydroxyl group may be acylated or acetalized or esterified or oxidized to a keto group. If the 3-hydroxyl group is esterified, acetalized or etherified, it may be converted to a free hydroxyl group.

The drugs are useful as heart drugs of a high degree of activity with comparatively low toxicity and in particular a desirably broad span between effective dose and toxic dose.

3,738,985

CERTAIN 3-(3-AMINO-2-BENZOYLOXYPROPYL)-4(3H)-QUINAZOLINONES

Rudi Beyerle, 15 Allensteinerstrasse, 6451 Bruchkobel, Germany; and Adolf Stachel, deceased; by Ingeburg Lydia Katharina Stachel, heiress-at-law, 52 Meerholzerstrasse, 6; Rolf-Eberhard Nitz, 28 Steinauerstrasse, 6; and Josef Scholtholt, 18 Hunfelderstrasse, 6, all of Frankfurt am Main-Fechenheim, Germany

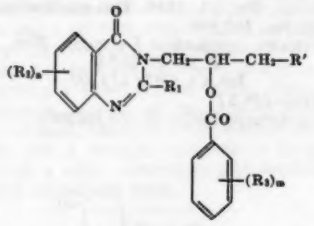
No Drawing. Filed Apr. 22, 1971, Ser. No. 136,560

Claims priority, application Germany, Apr. 25, 1970, P 20 20 233.9

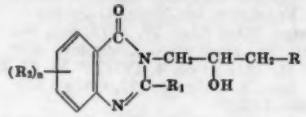
Int. Cl. C07d *51/48*

U.S. Cl. 260—243 B **5 Claims**

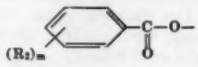
The present invention relates to pharmaceutically active basically substituted 4(3H)-quinazolinone derivatives possessing excellent coronary dilator properties and having the structural formula



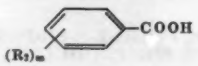
wherein R' stands for a radical selected from the group consisting of secondary aliphatic, cycloaliphatic or araliphatic amines having 2–10 carbon atoms and 5-, 6- or 7-membered heterocyclic nitrogen bases which contain in addition to the nitrogen atom a corresponding number of methylene groups, as well as optionally an additional nitrogen atom, an O or an S atom, said radical being bound, via a nitrogen atom; R_1 stands for hydrogen, an alkyl radical having from 1 to 4 carbon atoms, a pyridyl radical, a benzyl or phenyl radical, the two latter being optionally substituted by lower alkyl, lower alkoxy groups or halogen; R_2 represents hydrogen, nitro, amino, trifluoromethyl or lower alkoxy groups having from 1 to 4 carbon atoms; R_3 stands for alkoxy having from 1 to 4 carbon atoms; *m* means one of the integers 1, 2 or 3 and *n* means an integer from 1 to 4; and to the production of such derivatives by acylating, optionally in the presence of an acid-binding agent, 4(3H)-quinazolinones having the structural formula



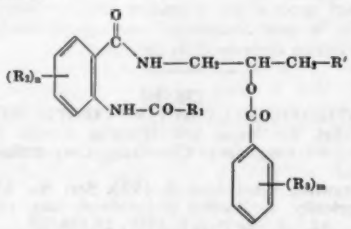
wherein R_1, R_2 and *n* have the above-given meanings, R is identical with R', or, in case R' contains an acyloxy radical of the structural formula



wherein R_2 and *m* have the above-given meanings, said R may also represent the radical of the underlying hydroxy compound, with an alkoxy benzoic acid of the formula



or a functional derivative thereof: or, the said derivatives may be produced by cyclizing, in the presence of dehydrating agents, 2-acylaminobenzamides having the structural formula



wherein the various radicals have the above-given meanings.

3,738,986

N-(1-ALKENYL)-PIPERAZINES

Stanley Robert Sandler, Springfield, and Maria Louisa Delgado, Philadelphia, Pa., assignors to Borden Inc., New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 759,766, Sept. 13, 1968. This application May 14, 1971, Ser. No. 143,658

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 R **3 Claims**

This invention relates to novel mono-substituted derivatives of piperazine in which one hydrogen of piperazine is substituted by a 1-alkenyl radical containing from 3 to 10 carbon atoms, and to a method for making said derivatives in good yield by reacting piperazine with the corresponding C_3 to C_{10} aldehydes at between −30° C. and +40° C. in a medium in which the aldehyde is soluble.

3,738,987

FUNGICIDAL 3-AMINO-4-DIHALO PYRAZOLONES

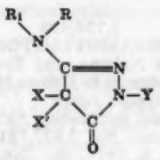
Andre Allais, Les Lilas, and Pierre Girault, Paris, France, assignors to Roussel UCLAF, Paris, France

No Drawing. Original application Jan. 2, 1969, Ser. No. 788,629, now Patent No. 3,632,818. Divided and this application Feb. 19, 1971, Ser. No. 117,113

Int. Cl. A01n 9/22

U.S. Cl. 424—273 10 Claims

3-amino-4,4-dihalo-5-pyrazolones of the formula



(I)

wherein X and X' are selected from the group consisting of chlorine and bromine, Y is selected from the group consisting of alkyl, cycloalkyl and aryl which may be substituted and R and R_1 are selected from the group consisting of hydrogen, alkyl, aryl, cycloalkyl and aralkyl which possess fungicidal activity.

3,738,988

PROCESS FOR OXIDATION OF DIHYDROQUINACRIDONES TO QUINACRIDONES

Julius Jackson, Westfield, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 8, 1970, Ser. No. 79,254

Int. Cl. C07d 39/00

U.S. Cl. 260—279 R 6 Claims

Quinacridones are prepared by oxidation of a corresponding 6,13 dihydroquinacridone in aqueous slurry using less than the stoichiometric amount of an anthraquinone sulfonic acid as oxidizing agent. The oxidizing agent is regenerated in situ by bubbling an oxygen-containing gas through the slurry. Divalent iron, cobalt or nickel ions in the slurry increase the effectiveness of the oxidation. Selective oxidation is possible to either completely β-crystal phase product or to completely γ-crystal phase product as desired without formation of any quinacridonequinone.

3,738,989

L-3-HYDROXY-6-OXO-N-CYCLOPROPYLMETHYLMORPHINANS

Yoshiro Sawa, Ashiya, Ryozo Maeda, Osaka, and Haruhiko Tada, Toyonaka, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

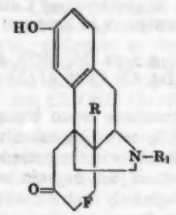
No Drawing. Original application Mar. 17, 1969, Ser. No. 807,917, now Patent No. 3,654,280, dated Apr. 4, 1972. Divided and this application June 29, 1971, Ser. No. 158,058

Claims priority, application Japan, Mar. 21, 1968, 43/18,385

Int. Cl. C07d 43/32

U.S. Cl. 260—285 3 Claims

A L-3-hydroxy-6-oxomorphinan compound represented by the formula:



wherein R represents a hydrogen atom or a hydroxyl group, R_1 represents a cyclopropylmethyl group and F represents the presence or absence of a double bond, being useful as a narcotic antagonist, is prepared by introducing the substituent at the N-position.

3,738,990

NICOTINIC ACID DERIVATIVES

Alden Gamaliel Beaman, North Caldwell, and Oscar Neal Miller, Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Nov. 23, 1970, Ser. No. 92,296

Int. Cl. C07d 31/36

U.S. Cl. 260—295.5 R 2 Claims

6 - halo-2-hydroxynicotinic acid, 4-amino-2-hydroxynicotinic acid, 2-hydroxy-4-(lower alkyl)nicotinic acid, 2-hydroxy-5-(lower alkyl)nicotinic acid, 5-halo-2-hydroxynicotinic acid, and their salts, useful as hypolipidemic agents, are described.

3,738,991

LATEX COMPOSITIONS

Delmer H. Reed, South Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed May 13, 1971, Ser. No. 143,209

Int. Cl. C08f 29/46, 37/18

U.S. Cl. 260—296 RW 3 Claims

There is described herein an acrylic latex having enhanced adhesion by the incorporation therein of an amine salt of a copolymer of ethylene and acrylic acid. Better wet adhesion characteristics are described when a small amount of wax is incorporated into the latex. The latex may be employed in the manufacture of paints, sealants, caulks and mastics.

3,738,992

1-AZA-5-HYDROXYMETHYL-3,7-DIOXABICYCLO-[3,3,0]-OCTANE

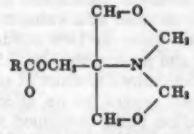
John A. Frump, Terre Haute, Ind., assignor to Commercial Solvents Corporation

No Drawing. Continuation-in-part of abandoned application Ser. No. 2,394, Jan. 12, 1970. This application Feb. 7, 1972, Ser. No. 224,270

Int. Cl. C07d 85/26

U.S. Cl. 260—307 F 3 Claims

Bicyclic oxazolidine esters corresponding to the formula



where R is an alkyl or alkenyl radical of from 8 to 17 carbon atoms. The compounds are useful in lubricant compositions and as anti-foam agents.

3,738,993

BENZIMIDAZOLYL SULFIDES AND SULFONES

Rudiger D. Haugwitz, Highland Park, and Venkatachala L. Narayanan, Hightstown, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Mar. 4, 1971, Ser. No. 121,159

Int. Cl. C07d 49/38

U.S. Cl. 260—309.2 4 Claims

1 - alkylthioalkyl- and 1 - alkylsulfonylalkyl-benzimidazoles are provided which are useful as anthelmintics.

3,738,994

2-CYANO-POLYHALOBENZIMIDAZOLES

Michael H. Fisher, Somerville, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Original application Sept. 26, 1969, Ser. No. 861,452, now abandoned. Divided and this application Aug. 13, 1971, Ser. No. 171,749

Int. Cl. C07d 49/38

U.S. Cl. 260—309.2 2 Claims

Trihalo- and tetrahalobenzimidazoles having at the 2-position a substituent selected from the group consisting

of cyano, thiocarbamoyl, loweralkylmercapto, loweralkylsulfonyl and 2-thiazolin-2-yl are active as anthelmintics, coccidiostats and as pesticides.

3,738,995

SOLVENT PROCESS FOR THE PREPARATION OF 1 - CARBAMOYL-SUBSTITUTED 2 - BENZIMIDAZOLECARBAMATES

Charles D. Adams, Newark, Del., and Rudolph Schlatter, Chadds Ford, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 774,528, Nov. 8, 1968. This application May 14, 1971, Ser. No. 143,628

Int. Cl. C07d *49/38*

U.S. Cl. 260—309.2 **4 Claims**

1 - carbamoyl-substituted 2 - benzimidazolecarbamate fungicides are made by reacting an alkyl 2-benzimidazolecarbamate with the appropriate isocyanate in a selected solvent such as methyl ethyl ketone at temperatures between 10 and 100° C. for 0.1 to 24 hours.

The process is particularly useful for the preparation of 1-butylcarbamoyl-2-benzimidazolecarbamic acid, methyl ester, a compound useful as a fungicide.

3,738,996

PROCESS FOR THE PREPARATION OF QUATERNARY IMIDAZOLINE DERIVATIVES

Michael Bloch, Salmunster, Germany, and Adolph Koebner, St. Bees, Cumberland, England, assignors to Rewo Chemische Fabrik G.m.b.H., Steinau, Kreis Schluchtern, Germany

No Drawing. Filed Dec. 21, 1971, Ser. No. 210,543

Claims priority, application Germany, Dec. 23, 1970, P 20 63 424.6

Int. Cl. C07d *49/34*

U.S. Cl. 260—309.6 **8 Claims**

Quaternary imidazoline derivatives are prepared in high yield by quaternizing a basic tertiary imidazoline with a halogen-substituted aliphatic organic carboxylic or sulfonic acid or a sultone, at a temperature within the range of 40° C. to 90° C., under mildly alkaline conditions, by adding alkali if necessary at such a rate as to maintain the pH of the reaction mixture at a value such that samples thereof diluted with water to 10%-solids fall within the pH range of 7–9, and preferably 7 to 7.5, any remaining amount of the predetermined amount of alkali being added subsequently without regard to its effect upon the pH value, but the reaction being continued within the aforesaid temperature range until a constant pH value is attained. In this way under optimum conditions yields even in excess of 90% can frequently be secured.

3,738,997

SUBSTITUTED 1,3-DIOXEPINS

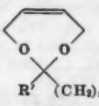
Chester E. Pawloski, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Jan. 6, 1970, Ser. No. 1,032, now Patent No. 3,652,594, dated Mar. 28, 1972. Divided and this application Sept. 9, 1971, Ser. No. 179,215

Int. Cl. C07d *17/00*

U.S. Cl. 260—338 **2 Claims**

The present invention is directed to new substituted 1,3-dioxepin compounds corresponding to the formula:



wherein R is a lower alkyl group of from 1 to about 8, both inclusive, carbon atoms or an aryl group of from 6 to about 8 carbon atoms inclusive. R' is hydrogen or an alkyl group of from 1 to about 8, both inclusive, carbon atoms, and *n* is an integer of from 0 to about 8. The present invention is further directed to a novel process for the preparation of such substituted 1,3-dioxepin compounds wherein *n* is 0 by reacting, at room temperatures, a corresponding trialkyl orthoalkanoate with cis-2-butene-1,4-diol in the presence of a non-oxidizing acid catalyst. The compounds of the present invention are suitable for use as herbicides.

3,738,998

DECARBAMOYLMITOSANES

Keizo Uzu, Kinichi Nakano, and Toshinaka Takahashi, Tokyo, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo-to, Japan

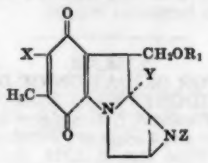
No Drawing. Original application Apr. 8, 1969, Ser. No. 814,278, now Patent No. 3,627,781. Divided and this application Apr. 9, 1971, Ser. No. 132,893

Claims priority, application Japan, Apr. 11, 1968, 43/23,704, 43/23,705, 43/23,706; May 2, 1969, 44/29,122

Int. Cl. C07d *27/36*

U.S. Cl. 260—326.3 **3 Claims**

Compounds of the formula



and processes for their preparation are provided wherein X is methoxy or amino, Y is methoxy, hydroxy or hydrogen when R_1 is hydrogen and methoxy or hydroxy when R_1 is R_2CO, Z is hydrogen or methyl when R_1 is hydrogen and methyl or R_2CO when R_1 is R_2CO, R_1 is hydrogen or R_2CO and R_2 is lower alkyl. These compounds are antibiotics and, additionally, find use in treating tumors.

3,738,999

2,3,4,5-TETRAHYDRO-2-PHENYL-1,4-BENZOTHIAZEPINE, HYDROCHLORIDE

John Krapcho, Somerset, and Jack Bernstein, New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Original application Mar. 10, 1966, Ser. No. 533,264. Divided and this application May 28, 1970, Ser. No. 50,003

Int. Cl. A61k *27/00*; C07d *93/40*

U.S. Cl. 260—327 B **1 Claim**

This invention relates to 2,3,4,5-tetrahydro-2-phenyl-1,4-benzothiazepine, hydrochloride having valuable therapeutic properties and processes for the preparation thereof.

3,739,000

PROCESS FOR PREPARING AMINOTRIPHENYLMETHANE LEUCO BASES

Marcello Lodolini, Rochester, and Cataldo A. Maggiulli, Pittsford, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Sept. 25, 1970, Ser. No. 75,760

Int. Cl. C09b *11/14*

U.S. Cl. 260—391 **18 Claims**

Amino-triphenylmethane leuco bases are prepared by reacting benzaldehyde or a ring-substituted benzaldehyde with an N,N-dialkylaniline in the presence of a catalytically effective amount of an organic sulfonic acid. The reaction is advantageously carried out by employing a polar solvent which forms an azeotrope with water and continuously removing the water produced in the reaction by azeotropic distillation.

3,739,001
25,26-DIHYDROXYCHOLECALCIFEROL
Hector F. De Luca, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.
No Drawing. Filed Oct. 22, 1971, Ser. No. 191,842
Int. Cl. C07c *171/08*
U.S. Cl. 260—397.2 1 Claim

25,26-dihydroxycholecalciferol and method for preparing same.

25,26-dihydroxycholecalciferol is characterized by its ability to induce intestinal calcium transport.

3,739,002
CEPHALOSPORIN C SOLUBILIZATION PROCESS
Harold B. Hayes and Gerald L. Huff, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
No Drawing. Continuation-in-part of application Ser. No. 836,953, June 26, 1969. This application Dec. 17, 1969, Ser. No. 886,030
The portion of the term of the patent subsequent to Feb. 8, 1989, has been disclaimed
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C 6 Claims

Acylation of the side-chain amino group of cephalosporin C with a halo lower alkanoyl group leads to a solvent-soluble product which can be efficiently extracted from the aqueous fermentation broth by use of an organic solvent.

3,739,003
ORGANIC COMPOUNDS OF THE TRANSITION METALS
Georgis Codet, Rueil, Francois Dawans, Bougival, Francois-Xavier de Charentenay, Rueil, and Philippe Teyssie, Le Vesinet, France, assignors to Institut Francais du Petrole des Carburants et Lubrificants, Rueil-Malmaison, France
No Drawing. Filed Oct. 1, 1969, Ser. No. 862,948
Claims priority, application France, Oct. 1, 1968, 168,366
Int. Cl. C07f *15/04, 15/06*
U.S. Cl. 260—439 R 6 Claims

As catalysts, particularly for the polymerization of ethylenically unsaturated monomers, there are provided compounds of the formula:

$$[((H_{3-n}X_n)C{-}CO_2{-})_mM_T(Y)_p]_qL_r$$

in which X is a halogen atom, n is 1, 2 or 3, M_T is a transition metal from Groups IV to VIII (sub-groups *a* and *b*) of the periodic chart of the elements, Y is a hydride ion or an anion, except OH, each of m, p and q is an integer from 1 to 4, $m+p$ being such as to constitute an electrically neutral compound, L is a Lewis base and r is a number from 0 to 2. Preferred examples include nickel monochloro-trifluoracetate, nickel monobromo-trifluoracetate, cobalt monochloro-trifluoracetate, and complexes thereof.

3,739,004
SYNTHESIS FERROCENYL BUTADIENE COMPOUNDS
Billy W. Ponder, Tuscaloosa, and Charles W. Barnhill, Birmingham, Ala., assignors to the United States of America as represented by the Secretary of the Army
No Drawing. Filed Oct. 1, 1971, Ser. No. 185,856
Int. Cl. C07f *15/02*
U.S. Cl. 260—439 CY 6 Claims

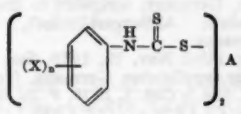
The process for making ferrocenyl butadiene by reacting ferrocenealdehyde in tetrahydrofuran solvent with allyllithium to produce ferrocenylbutenol, and then reacting the ferrocenylbutenol in a dehydration reaction in the presence of neutral alumina to produce butadienylferrocene. The butadienylferrocene can be used in the preparation of polymers for solid propellant binders such as being copolymerized with butadiene.

3,739,005
PREPARATION OF AROMATIC POLYISOCYANATES BY CATALYTIC CARBONYLATION OF NITRO COMPOUNDS
James D. McClure, Oakland, Calif., assignor to Shell Oil Company, Houston, Tex.
No Drawing. Filed Dec. 13, 1971, Ser. No. 207,654
Int. Cl. C07c *119/04*
U.S. Cl. 260—453 PC 14 Claims

An improved process for preparing carbocyclic aromatic isocyanates comprises contacting a carbocyclic aromatic polynitro compound with carbon monoxide in the presence of a catalyst system consisting of certain noble metal halides, an organic isocyanide and at least one compound selected from the group consisting of iron molybdate, manganese molybdate and iron borate.

3,739,006
BIS DITHIOCARBANILATES
John Joseph D'Amico, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Feb. 2, 1970, Ser. No. 8,023
Int. Cl. C07c *155/08*
U.S. Cl. 260—455 A 3 Claims

Bis dithiocarbanilates of the formula



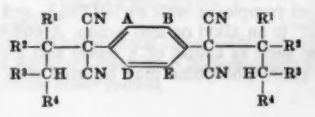
wherein A is thioalkylene, oxyalkylene, or xylylene, X is lower alkyl, chloro, bromo, fluoro, iodo, nitro or hydrogen and n is one or two are disclosed. The new compounds are useful as nematocides, bacteriocides, fungicides and insecticides.

3,739,007
PROCESS FOR PREPARING ALIPHATIC NITRILES OF INCREASED CARBON CHAIN LENGTH
Irving Schwager, Hopewell Junction, and Robert M. Suggitt, Wappingers Falls, N.Y. (both % Texaco, Inc., P.O. Box 509, Beacon, N.Y. 12508)
No Drawing. Filed Aug. 26, 1970, Ser. No. 67,243
Int. Cl. C07c *121/02*
U.S. Cl. 260—464 5 Claims

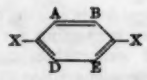
This process concerns the preparation of aliphatic nitriles, particularly nitriles having an increased carbon chain length by the addition of acetonitrile to aliphatic olefins containing 6 to 20 carbon atoms by a free radical initiated addition reaction at temperatures of 150° to 180° C. using mole ratios of acetonitrile to olefin ranging from about 100 to 200.

3,739,008
FLUORO- AND CYANO-SUBSTITUTED 1,4-PHENYLENE-BIS(HYDROCARBYLMALONONITRILES) AND PROCESS OF PREPARATION
Elmore Louis Martin, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Continuation-in-part of application Ser. No. 664,315, Aug. 30, 1967, which is a continuation-in-part of application Ser. No. 514,385, Dec. 16, 1965. This application Sept. 22, 1970, Ser. No. 74,466
Int. Cl. C07c *49/62, 121/02, 121/66*
U.S. Cl. 260—465 G 6 Claims

Compounds of the formua



in which R^1, R^2, R^3 and R^4 are hydrogen or hydrocarbyl of 1–10 carbon atoms free of olefinic or acetylenic unsaturation and wherein A, B, D and E are hydrogen, fluorine or a cyano group with the proviso that no more than two of A, B, D and E are hydrogen, can be made by reaction of the appropriate substituted malononitrile with a compound



in which X is halogen, in the presence of an alkali metal, alkaline earth metal, or lower alkoxides thereof. The compounds are intermediates for the preparation of substituted tetracyanoquinodimethans useful as dyestuffs and for the preparation of charge transfer complexes of tetracyanoquinodimethans also useful dyestuffs and antistatic agents.

3,739,009

PRODUCTION OF AROMATIC O-AMINONITRILES

Hans Juergen Sturm, Gruenstadt, and Helmut Junge, Wachenheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Nov. 12, 1970, Ser. No. 89,036
Claims priority, application Germany, Nov. 15, 1969, P 19 57 590.7; Oct. 7, 1970, P 20 49 161.6
Int. Cl. C07c *121/12;* **C09b** *1/20*
U.S. Cl. 260—465 B **8 Claims**

Manufacture of aromatic o-aminonitriles by reaction of aromatic o-aminocarboxamides with dehydrating agents. Aromatic o-aminonitriles are intermediates in the manufacture of dyes.

3,739,010

CHLORINATION PROCESS

Eijiro Suzuki, Hyogo, and Ryuzo Kimoto, Kazuo Imaoka, and Kojiro Umemoto, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka, Japan

No Drawing. Filed Sept. 13, 1971, Ser. No. 180,136
Claims priority, application Japan, Sept. 18, 1970, 45/82,222
Int. Cl. C07c *121/02*
U.S. Cl. 260—465.7 **3 Claims**

Methacrylonitrile is reacted with chlorine in the gas phase at an elevated temperature and in the presence of water vapor to produce 3-chloro-2-cyanopropene and 1,3-dichloro-2-cyanopropene. The objective compounds are useful as intermediates for the synthesis of medicines and industrial chemicals.

3,739,011

CATALYTIC ISOMERIZATION OF 2-METHYL-3-BUTENENITRILE TO LINEAR PENTENENITRILES

William Charles Drinkard, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 876,613, Nov. 13, 1969. This application Apr. 30, 1971, Ser. No. 139,202
Int. Cl. C07c *121/30*
U.S. Cl. 260—465.9 **10 Claims**

A process for isomerization of 2-methyl-3-butenenitrile to linear pentenenitriles by means of certain zero valent nickel complexes such as $Ni(PR_3)_3$ and $Ni(PR_3)_4$ wherein "R" is an alkyl or aryl group. A combination of a promoter such as cation of a metal and excess ligand such as triphenylphosphine may be used with the nickel complex.

3,739,012

DIMETHYLSULFONIUM - 2-[(ALKOXYCARBONYL) CARBONYL]PHENACYLIDES AND DERIVATIVES THEREOF

Kenneth Wayne Ratts, 12139 Lake Como Drive, Creve Coeur, Mo. 63141

No Drawing. Continuation of application Ser. No. 765,733, Aug. 8, 1968, which is a division of application Ser. No. 549,160, May 11, 1966, both now abandoned. This application Feb. 16 1971, Ser. No. 115,865
Int. Cl. C07c *149/46*
U.S. Cl. 260—470 **3 Claims**

Dialkyl sulfonium α-(alkoxycarbonylcarbonyl)phenacylides, useful as fungicides.

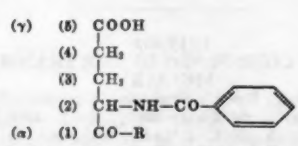
3,739,013

METHOD OF PREPARING ALPHA AMIDES

Giampaolo Picciola and Luigi Rovati, Milan, Italy, assignors to Rotta Research Laboratorium S.p.A., Milan, Italy

No Drawing. Filed Sept. 23, 1970, Ser. No. 74,926
Claims priority, application Italy, Oct. 13, 1969, 53,660/69
Int. Cl. C07c *103/30*
U.S. Cl. 260—471 R **8 Claims**

Method of preparing an alpha-amide of the general formula:



comprising esterifying the (5) carboxyl group of glutamic acid with benzyl alcohol, benzoylating the amino group of the ester thus obtained, amidating the (1) carboxyl group of the benzoylated ester, and debenzylating the amidated benzoylated ester.

3,739,014

STABILIZERS FOR CELLULAR POLYURETHANES

Gunter Oertel, Cologne-Flittard, Manfred Dahm, Leverkusen, Hans Holtschmidt, Leverkusen-Steinbuechel, and Manfred Roegler, Bad Godesberg, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 25, 1969, Ser. No. 802,246
Claims priority, application Germany, Mar. 1, 1968, P 16 94 248.6
Int. Cl. C07c *125/06*
U.S. Cl. 260—472 **5 Claims**

Non-ionic foam stabilizers for polyester polyurethane foams are obtained by linking hydrophobic amines or amides with polyethers containing ethylene oxide.

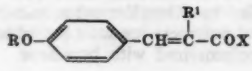
3,739,015

ESTERS OF p-PHENOXY AND p-ALKOXY CINNAMIC ACID

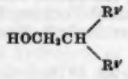
Toshio Wattanabe, Takeyuki Hashimoto, and Shigeki Yoshimatsu, Osaka, Shigeyuki Takeyama, Yamatomachi, Kita-Adachi-gun, Kohki Takashima, Tokyo, and Kiyoshi Izumi, Urawa, Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

No Drawing. Filed Sept. 4, 1970, Ser. No. 69,900
Int. Cl. C07c *69/76*
U.S. Cl. 260—473 R **15 Claims**

A compound of the formula:



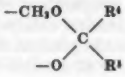
wherein X is a halogen atom, R is a phenyl radical or an alkyl radical having 12–18 carbon atoms and R^1 is a hydrogen atom, a methyl radical, or a phenyl radical, is condensed with a compound of the formula:



wherein $R^{2'}$ is a hydrogen atom and $R^{3'}$ is a radical selected from the group consisting of methacryloyloxy radical, halomethyl radical, a halogen atom and a radical of the formula:

$$-SO_3Me$$

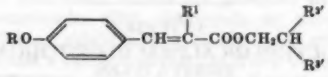
wherein Me is an alkali metal, or $R^{2'}$ and $R^{3'}$ form together a radical of the formula:



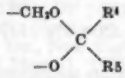
wherein

is the residual moiety of an acetal or a ketal.

An ester compound of the formula:

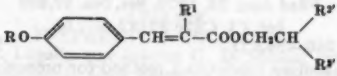


wherein R, R^1, $R^{2'}$ and $R^{3'}$ are as defined above, is produced. When $R^{2'}$ and $R^{3'}$ form said radical of the formula:



the said residual moiety of an acetal or a ketal is eliminated therefrom to form a resulting product. When $R^{3'}$ is a halogen atom or a halomethyl radical. The resultant product is further hydrolyzed to convert its halogen atom or halomethyl radical respectively to hydroxy radical or hydroxymethyl radical.

A compound is produced which has the formula:



wherein R^2 is a hydrogen atom, R^3 is a hydroxymethyl radical when R^2 is a hydroxy radical or R^3 is a radical selected from the group consisting of methacryloyloxy radical, halomethyl radical, hydroxymethyl radical, hydroxy radical, a halogen atom and a radical of the formula:

$$-SO_3Me$$

when R^2 is a hydrogen atom and Me is as defined above, R, R^1, R^2 and R^3 are as defined above. The compound is useful as a hypolipemic agent, a hypotriglyceridemic agent and a hypocholesterolemic agent.

3,739,016

PERFLUORO-PHENOXYPROPIONIC ACID AND ESTERS AND SALTS THEREOF

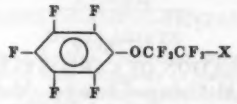
Richard W. Quarles, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Original application Mar. 18, 1970, Ser. No. 20,806. Divided and this application June 28, 1972, Ser. No. 267,108

Int. Cl. C07c *69/76*

U.S. Cl. 260—473 G **2 Claims**

Novel compounds of the formula



are provided wherein X is —COF, —COCl, —COOH, —COOR, —COOM, —$CONR_1R_2$, or —CN wherein R is an alkyl radical, M is a metal, and R_1 and R_2 are independently hydrogen or alkyl radicals. Also provided are novel compounds of the formula

$$C_6F_5OCF_2CF_2CF_2OCF(CF_3)X$$

wherein X is as defined above. These novel compounds are useful in the preparation of perfluoro(3-phenoxypropyl vinyl ether) monomer, said monomer being useful in the preparation of copolymers having improved oxidative stability.

3,739,017

OXIDATION OF ETHYLENE ACETALS OF AROMATIC ALDEHYDES

Edward L. Reilly, Woodbury, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 6, 1971, Ser. No. 141,012

Int. Cl. C07c *69/82*

U.S. Cl. 260—475 P **7 Claims**

An ethylene acetal of an aromatic aldehyde dissolved in a substantially inert, nonacidic organic solvent with a cobalt catalyst also dissolved therein is oxidized at a temperature of approximately 20–125° C. by molecular oxygen to form a 2-hydroxyethyl ester of the aromatic acid corresponding to the aldehyde.

3,739,018

11-AZA-10 KETO DIPHATIC COMPOUNDS

Clive A. Henrick, and John B. Siddall, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Filed Jan. 18, 1971, Ser. No. 107,431

Int. Cl. C07c *101/28*

U.S. Cl. 260—482 R **8 Claims**

Novel 11-aza-10 keto aliphatic compounds prepared by the reaction of an allylic alcohol with N,N-dialkylacetamide dialkyl acetal useful for insect control.

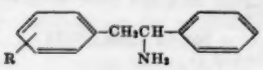
3,739,019

PREPARATION OF OPTICALLY ACTIVE TRANS-CHRYSANTHEMIC ACID

Kenzo Ueda, Nishinomiya, and Yoshio Suzuki, Amagasaki, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed June 29, 1970, Ser. No. 50,931
Claims priority, application Japan, July 2, 1969, 44/52,619
Int. Cl. C07c *51/42, 61/16, 87/78*
U.S. Cl. 260—514 H 7 Claims

An optical resolution method for preparation of (+)-trans-chrysanthemic acid which comprises using as a resolution agent a novel amine represented by the formula,



wherein R is an alkyl having 1 to 3 carbon atoms or a halogen atom.

3,739,020

PREPARATION OF CARBOXYLIC ACIDS

Dorothee M. McClain and Irving L. Mador, Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

No Drawing. Filed May 13, 1969, Ser. No. 824,305
Int. Cl. C07c *51/26, 53/08*
U.S. Cl. 260—531 R 10 Claims

A vapor phase process for the preparation of carboxylic acids by the direct oxidation of lower alkanols. In accordance with one embodiment, the process comprises reacting ethyl alcohol, in vapor form, with an oxygen-containing gas in the presence of a solid palladium metal-containing catalyst. Preferred reaction conditions include a temperature of 130° C. or less and atmospheric or slightly elevated pressure. The reaction is carried out in the absence of an alkaline material.

3,739,021

CONTINUOUS PREPARATION OF NITROLOTRIACETIC ACID

William Jennings Peppel, Heinz Schulze, and Edward Thomas Marquis, Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Filed Aug. 19, 1971, Ser. No. 173,317
Int. Cl. C07c *101/20*
U.S. Cl. 260—531 C 4 Claims

A falling-film reactor is employed to provide a continuous process for preparing nitrilotriacetic acid (NTA) and its salts from triethanolamine (TEA) in the presence of alkali metal hydroxides and cadmium salts. Temperatures greater than the melting point of cadmium metal are employed.

3,739,022

L-2-AMINO-4-METHOXY-TRANS-3-BUTENOIC ACID

Thomas Casimir Demny, Livingston, and James Parnell Scannell, Bloomfield, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Oct. 20, 1971, Ser. No. 191,074
Int. Cl. C07c *101/04*
U.S. Cl. 260—534 M 1 Claim

The present invention relates to the preparation of the antibacterial substance L-2-amino-4-methoxy - trans - 3-butenoic acid by culturing the organism *Pseudomonas aeruginosa*.

3,739,023

PROCESS FOR THE SELECTIVE CATALYTIC DEHALOGENATION OF HALO ACETIC ACIDS

Kurt Sennewald, Hurth-Hermulheim, Alexander Ohorodnik, Liblar, Werner Mittler, Hurth-Hermulheim, Joachim Hundeck, Knapsack, near Cologne, and Hans-Joachim Hardel, Bruhl-Vochem, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

Filed Mar. 23, 1970, Ser. No. 21,697
Claims priority, application Germany, Mar. 25, 1969, P 19 15 037.9
Int. Cl. C07c *53/16*
U.S. Cl. 260—539 A 3 Claims

Selective hydrogenating dehalogenation of halocarboxylic acids, particularly of a crude product which is obtained in the chlorination of acetic acid with the formation of monochloroacetic acid and which in addition to monochloroacetic acid contains di- and optionally trichloroacetic acid as by-product and also acetic acid, by introducing an excess of hydrogen into the liquid crude product, heated to a temperature of 60–170° C., in the presence of a hydrogenation catalyst which is stationary or suspended in the crude product and which consists of an inert carrier and also of a noble metal of Group VIII of the Periodic System, wherein the di- and optionally trihalocarboxylic acid is partially dehalogenated into monohalocarboxylic acid. The noble metal catalyst is more particularly activated by adding at least one metal salt and/or metal oxide which is not a contact poison for the noble metal catalyst and which is at least partially soluble in the feed mixture, and/or adding at least one organic compound which is suitable as a proton acceptor and is at least partially soluble in the starting mixture, the added material being introduced into the starting mixture to be dehalogenated.

3,739,024

PRODUCTION OF ALPHACHLOROTHIOAMIDE DERIVATIVES

John P. Chupp, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 868,625, Oct. 22, 1969, which is a continuation-in-part of application Ser. No. 842,372, July 16, 1969, now Patent No. 3,594,394. This application Dec. 20, 1971, Ser. No. 210,209
Int. Cl. C07c *153/05*
U.S. Cl. 260—551 S 8 Claims

A process for preparing α-chlorothioamides by the reaction of an α-chloroamide with a thionophosphine sulfide. These compounds possess herbicidal activity.

3,739,025

PROCESS FOR THE PREPARATION OF CYCLOPROPYLMETHYL ALKYL AMINES

Jerome Linder and Lester L. Maravetz, Westfield, George N. Schmit, Scotch Plains, and Neil F. Newman, Matawan, N.J., assignors to Esso Research and Engineering Company

Filed Aug. 28, 1970, Ser. No. 67,809
Int. Cl. C07c *85/12, 87/34*
U.S. Cl. 260—563 D 5 Claims

This invention relates to a method for preparing cyclopropylmethyl alkyl amines and alkylcyclopropylmethyl alkyl amines. The method comprises the steps of reacting an allylic chloride with hydrogen bromide in the presence of a free radical catalyst to form the anti-Markownikoff product 1-bromo-3-chloropropane which can be optionally substituted with C_1–C_4 alkyl groups; contacting the reaction product of step (1) with a metal cyanide to form a gamma-chloronitrile; reacting the gamma-chloronitrile with an alkali metal hydroxide to yield cyclopropyl

or an alkylcyclopropyl cyanide; reacting the cyclopropyl cyanide or alkylcyclopropyl cyanide with an alkyl amine and hydrogen to yield a cyclopropylmethyl alkyl amine or an alkylcyclopropylmethyl alkyl amine.

In another aspect of this invention, the cyclopropyl or alkylcyclopropyl cyanide is reacted with hydrogen and the resulting cyclopropylmethyl amine or alkylcyclopropylmethyl amine is then reacted with either a ketone, aldehyde, or alcohol and hydrogen, or with an alkyl halide in the absence of hydrogen, to form either cyclopropylmethyl alkyl amines or C_1–C_4 alkylcyclopropylmethyl alkyl amines.

In still another variation of this invention, an N-alkylidene cyclopropylmethyl amine, or an N-alkylidene alkylcyclopropylmethyl amine, prepared by reacting a cyclopropylmethylamine or an alkylcyclopropylmethyl amine with an aldehyde or ketone, can be hydrogenated to form the cyclopropyl methyl alkyl amines or alkylcyclopropylmethyl alkyl amines.

The formation of cyclopropylmethyl alkyl amines and alkylcyclopropylmethyl alkyl amines without concurrent hydrogenolysis of the cyclopropane ring has proven to be quite unexpected and is the result of the careful conditions under which the cyclopropyl cyanide or alkylcyclopropyl cyanide is reacted with the various reactants stated hereinabove.

3,739,026

REDUCTIVE ALKYLATION REACTIONS USING MODIFIED NICKEL CATALYST SYSTEMS

Farris H. Wilson, Jr., Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron Ohio

No Drawing. Continuation of application Ser. No. 606,010, Dec. 30, 1966. This application Dec. 3, 1969. Ser. No. 876,174

Int. Cl. C07f *85/08*

U.S. Cl. 260—576 **9 Claims**

N-alkyl substituted amines are produced by reacting amine compounds, nitro compounds or nitroso compounds with an aldehyde or a ketone in the presence of hydrogen and a catalytic amount of a two component or a three component catalyst system, the former comprising a nickel catalyst and an acid, and the latter comprising a nickel catalyst, an acid and sulfur-containing compounds.

3,739,027

HYDROGENATION OF NITROPARAFFINS

Walter C. Gates, Jr., Newburgh, N.Y., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed May 21, 1971, Ser. No. 145,873

Int. Cl. C07c *85/10*

U.S. Cl. 260—583 M **10 Claims**

A process for the catalytic hydrogenation of secondary mono-nitroparaffins wherein high conversion and selectivity to secondary alkyl primary amines is obtained by passing the nitroparaffin through a catalyst bed and hydrogenating at an average conversion temperature of 200 to 450° F. where the difference in ° F. (ΔT) between the maximum conversion temperature and the inlet temperature of said bed is at least 100° F.

3,739,028

PREPARATION OF AMINES

Ralph W. Lagally and Johann G. D. Schulz, Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Nov. 24, 1969, Ser. No. 879,602

Int. Cl. C07c *85/04*

U.S. Cl. 260—585 A **14 Claims**

A process for preparing primary alkyl amines which involves reacting an alkyl halide with ammonia in a monohydric alcohol or a liquid saturated hydrocarbon wherein critical amounts of ammonia are used within a critical temperature range.

3,739,029

N-ALKYL AMINE PRODUCTION

Eugene F. Magoon, Walnut Creek, and Lynn H. Slaugh, Lafayette, Calif., assignors to Shell Oil Company, New York, N.Y.

Continuation of abandoned application Ser. No. 832,307, June 11, 1969. This application Dec. 29, 1971, Ser. No. 213,770

Int. Cl. C07c *85/02*

U.S. Cl. 260—585 A **5 Claims**

Ethylene is converted to n-alkyl amines by (1) telomerizing ethylene and ethyl iodide to primary n-alkyl iodides, (2) reacting the n-alkyl iodide with ammonia or an amine to produce a n-alkyl amine hydroiodide, (3) treating the amine hydroiodide with a base to produce a n-alkyl amine and an iodide salt, (4) converting the iodide salt to hydrogen iodide and (5) hydroiodinating ethylene with the hydrogen iodide to produce ethyl iodide for recycle to provide the ethyl iodide for telomerization with ethylene.

3,739,030

2-HYDROXY-5-AMINO-BENZAMIDE DERIVATIVES

Boris Gradnik and Andrea Pedrazzoli, Milan, and Leone Dall'Asta, Pavia, Italy, assignors to Societe d'Etudes de Recherches et d'Applications Scientifiques et Medicales E.R.A.S.M.E., Paris, France

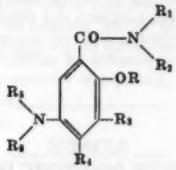
No Drawing. Filed June 17, 1970, Ser. No. 47,168

Claims priority, application Great Britain, June 20, 1969, 31,267/69

Int. Cl. C07c *103/30*

U.S. Cl. 260—559 S **8 Claims**

2-hydroxy-5-amino-benzamide derivatives of formula



have a good muscle relaxant activity and a strong anti-inflammatory action. They are prepared by hydrolysis of the corresponding 5-acetamido-derivatives and optional subsequent alkylation, in any order. They can be included in pharmaceutical compositions in dosage unit form in amounts of from 50 to 500 mg.

3,739,031

DODECYL 2-HYDROXYETHYL SULFOXIDE

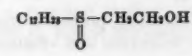
Hill M. Priestley, North Bergen, and James H. Wilson, Demarest, N.J., assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Division of application Ser. No. 869,985, Aug. 25, 1969, which is a continuation of application Ser. No. 647,333, June 20, 1967, which is a continuation-in-part of application Ser. No. 365,487, May 6, 1964, which in turn is a continuation-in-part of applications Ser. No. 725,505, Apr. 1, 1958, and Ser. No. 60,546, Oct. 5, 1960, all now abandoned. This application Oct. 23, 1970, Ser. No. 83,623

Int. Cl. C07c *147/14, 147/02*

U.S. Cl. 260—607 A **1 Claim**

The compound dodecyl 2-hydroxyethyl sulfoxide



has utility in detergent compositions as a foam-stabilizing additive.

3,739,032

PROCESS FOR THE PREPARATION OF UNSATURATED ETHERS

Friedrich Wunder, Florsheim (Main), Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Nov. 16, 1970, Ser. No. 90,075
Claims priority, application Germany, Nov. 17, 1969, P 19 57 680.8
Int. Cl. C07c *41/00*
U.S. Cl. 260—614 R 10 Claims

This invention relates to a process for the preparation of unsaturated ethers by splitting acetals at elevated temperature in the gaseous phase in the presence of supported catalysts containing a noble metal, in which process alkali metal or alkaline earth metal carboxylates in an amount of from 1 to 30% by weight are added to the catalysts to obtain an increase in yield.

3,739,033

NOVEL FLUORINATED ALIPHATIC TRIETHERS

Louis G. Anello, Orchard Park, and Richard F. Sweeney, Elma, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Mar. 1, 1971, Ser. No. 120,065
Int. Cl. C07c *43/00*
U.S. Cl. 260—615 F 10 Claims

Perhaloisoalkyl ethers of α,ω-partially-fluorinated aliphatic ether diols useful as stable fluid dielectric coolants, inert liquid media for carrying out chemical reactions, hydraulic fluids, lubricants and as oxygen and carbon dioxide transport components of artificial blood compositions.

3,739,034

PRODUCTION OF NONIONIC DETERGENTS

Joseph A. Cahill, Philadelphia, and Joseph A. Meyers III, Springfield, Pa., and Richard W. Sauer, Cherry Hill, N.J., assignors to Atlantic Richfield Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 878,223, Nov. 19, 1969. This application Mar. 17, 1972, Ser. No. 235,798
Int. Cl. C07c *41/02*
U.S. Cl. 260—615 B 6 Claims

Nonionic detergents are prepared by the liquid phase air oxidation of normal paraffins, reduction of the oxidate, fractionation of the reduced oxidate to remove the lighter compounds, and reacting the bottoms fraction with ethylene oxide to produce the desired nonionic detergents. This process offers a convenient method for the production of detergents from paraffins.

3,739,035

BIS(2,6-DIPHENYLPHENOLS)

Jimmy L. Webb, Jonesville, N.Y., and Walter L. Hall, Mount Vernon, Ind., assignors to General Electric Company

No Drawing. Filed May 26, 1971, Ser. No. 147,165
Int. Cl. C07c *39/16*
U.S. Cl. 260—619 A 6 Claims

Bis(2,6-diphenylphenols) prepared from 2,6-diphenylphenol and certain aldehydes and ketones are new chemical compounds. They are useful in making highly crystalline, thermally stable polyesters, including polycarbonates as homopolymers or for imparting these properties to copolymers in which they are incorporated.

3,739,036

METHOD OF PREPARING 3,3,3-TRIFLUOROPROPENE-1

John A. Valicenti, Roland L. Haim, and Forrest O. Stark, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Sept. 30, 1971, Ser. No. 185,392
Int. Cl. C07c *17/20, 21/18*
U.S. Cl. 260—653.3 5 Claims

$CF_3CH{=}CH_2$ is prepared by contacting a halogenated hydrocarbon, such as 1,1,1,3-tetrachloropropane, with sodium fluoride at a temperature of from 400 to 475° C. for at least five minutes.

3,739,037

SYNTHESIS OF UNSATURATED HYDROCARBONS

Norbert F. Cywinski, Odessa, Tex., assignor to Phillips Petroleum Company

No Drawing. Original application May 14, 1964, Ser. No. 367,581, now Patent No. 3,551,463, dated Dec. 29, 1970. Divided and this application Sept. 8, 1970, Ser. No. 70,477
Int. Cl. C07c *3/08*
U.S. Cl. 260—666 XA 7 Claims

Non-conjugated diolefins are produced by reacting acetylenic hydrocarbons with cyclic or acyclic mooolefins.

3,739,038

STILBENE PRODUCTION

Raymond A. Franz, Kirkwood, Phillip D. Montgomery, Creve Coeur, and Herbert J. Gebhart, Jr., Ferguson, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed June 8, 1971, Ser. No. 150,921
Int. Cl. C07c *5/20*
U.S. Cl. 260—668 R 10 Claims

This application describes a process for the conversion of bibenzyl and/or bibenzyl derivatives in the presence of oxygen and a halogen to produce stilbene and/or stilbene derivatives.

3,739,039

SELECTIVE TERTIARY ALKYLATION OF AROMATIC HYDROCARBONS

Jesse K. Boggs, Houston, Tex., assignor to Esso Research and Engineering Company

Filed Dec. 28, 1970, Ser. No. 101,921
Int. Cl. C07c *3/00*
U.S. Cl. 260—671 R 24 Claims

Aromatic hydrocarbons are selectively alkylated in high yields with C_7 to C_{44} tertiary alkyl halides, without the formation of substantial quantities of secondary alkyl aromatics, by carrying out the reaction in the presence of a non-volatile Friedel Crafts catalyst, a boiling liquid, and substantially reduced pressures. A sweep gas such as air or an inert gas may be employed with more active Friedel Crafts catalysts such as aluminum chloride. Preferably, the reaction is carried out under a pressure no greater than 150 mm. Hg absolute, and a temperature of 0° to 30° C. The concentration of hydrogen halides in the reaction mass is maintained below 0.02 mol fraction when using less active Friedel Crafts catalysts such as ferric chloride and below 0.005 when using more active catalysts such as aluminum chloride.

3,739,040
TERTIARY ALKYLATION OF BENZENE AT ATMOSPHERIC PRESSURE
Jesse K. Boggs, Houston, Tex., assignor to Esso Research and Engineering Company
No Drawing. Filed Dec. 28, 1970, Ser. No. 102,249
Int. Cl. C07c *3/56*
U.S. Cl. 260—671 P **12 Claims**

Benzene is selectively tertiary-alkylated at high conversions by reaction with C_7 to C_{44} tertiary alkyl chlorides in the presence of $FeCl_3$ catalyst at atmospheric pressure. The selective alkylation is accomplished by carrying out the reaction at a temperature from about −10° C. to about +30° C. and in the presence of a rapidly boiling solvent. The solvent concentration in the solvent/benzene mixture is from about 5 to about 90 mol percent, preferably from about 15 to about 80 mol percent.

3,739,041
CURABLE COMPOSITION OF MATTER OF CARBOXYL TERMINATED POLYESTERS AND DIEPOXY COMPOUNDS
Rolf Schmid, Gelterkinden, and Willy Fisch, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
No Drawing. Continuation-in-part of application Ser. No. 699,384, Jan. 22, 1968. This application Mar. 8, 1971, Ser. No. 122,198
Claims priority, application Switzerland, Jan. 25, 1967, 1,072/67; Mar. 8, 1967, 3,391/67
Int. Cl. C08g *45/14*
U.S. Cl. 260—835 **10 Claims**

The invention relates to process for the manufacture of crystalline, predominantly linear polyadducts, characterized in that a long-chain dicarboxylic acid of the formula

in which A represents a predominantly linear residue in which polymethylene chains alternate in a regular manner with ether oxygen atoms or carboxylic acid ester groups, the quotient $Z:Q$ (in which Z represents the number of carbon atoms in the recurrent structural unit of residue A and Q the number of oxygen bridges in the recurrent structural unit of residue A) being at least 5 and preferably at least 6, and the total number of carbon atoms in alternating carbon chains in residue A) being at least 50, is reacted at an elevated temperature with diepoxy compounds to form polyadducts, using for every equivalent of epoxide groups 0.7 to 1.2, preferably 0.9 to 1.0 equivalent of carboxyl groups.

3,739,042
BLOCK COPOLYMERS OF ANIONICALLY POLYMERIZED AND FREE RADICAL POLYMERIZED MONOMERS
Nan S. Chu, Hartsdale, N.Y., and James L. Jezl, Swarthmore, Pa., assignors to Standard Oil Company, Chicago, Ill.
No Drawing. Continuation-in-part of application Ser. No. 529,216, Feb. 23, 1966. This application Oct. 6, 1969, Ser. No. 864,204
Int. Cl. C08f *15/04*
U.S. Cl. 260—878 B **20 Claims**

Block copolymers are provided having at least two blocks, the first such blocks being a homopolymer or copolymer of a hydrocarbon selected from the group consisting of alpha-olefins having up to 18 carbon atoms and diolefins and at least one of the other blocks being a homopolymer or copolymer obtained from at least one other monomer such as acrylic and methacrylic esters, amides, and nitriles; vinyl halides; vinylidene halides; vinyl ethers and esters; vinylpyridines and alkylvinylpyridines; N-vinyl lactams; styrenes and alkyl styrenes and mixtures thereof.

3,739,043
LOW TEMPERATURE POLYMERIZATION PROCESS
Michael Fryd, Philadelphia, Pa., and John L. Ludlow, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Original application Oct. 20, 1969, Ser. No. 867,903. Divided and this application Nov. 18, 1971, Ser. No. 200,198
Int. Cl. C08f *15/26*
U.S. Cl. 260—885 **1 Claim**

A process for preparing a polymer by low temperature polymerization in an organic liquid, using as a polymerization initiator a system which comprises

(1) a peroxy or peracid compound,
(2) an organic reducing agent,
(3) a metal salt, and
(4) a small amount of water.

3,739,044
LOW TEMPERATURE POLYMERIZATION PROCESS AND INITIATING SYSTEM
David K. Wald, Cherry Hill, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Continuation-in-part of application Ser. No. 867,904, Oct. 20, 1969. This application Dec. 9, 1971, Ser. No. 206,552
Int. Cl. C08f *15/26*
U.S. Cl. 260—885 **3 Claims**

A process for preparing a polymer by low temperature polymerization in an organic liquid, using as a polymerization initiator a system which comprises

(1) a peroxy or peracid compound,
(2) benzoin, and
(3) a metal salt.

3,739,045
DICYANOPHENYL THIOPHOSPHATES
Heinrich Adolphi, Limburgerhof, Heinz Eilingsfeld, Frankenthal, and Manfred Patsch and Ernst Schaffner, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed June 3, 1971, Ser. No. 149,780
Claims priority, application Germany, June 20, 1970, P 20 30 545.7
Int. Cl. C07f *9/18;* **A01n** *9/36*
U.S. Cl. 260—940 **3 Claims**

New and valuable substituted dicyanophenyl thiophosphates having a good insecticidal action and a process for controlling insects with these compounds.

3,739,046
REMOVAL OF ORTHOPHOSPHATES FROM ORGANIC PHOSPHATE ESTERS
James R. Stanford, Sugar Land, and James D. Watson, Houston, Tex., assignors to Nalco Chemical Company, Chicago, Ill.
No Drawing. Filed May 3, 1971, Ser. No. 139,825
Int. Cl. C07f *9/02*
U.S. Cl. 260—990 **5 Claims**

Orthophosphates are removed from organic phosphate esters by precipitating them as inorganic phosphates at an elevated pH in a reaction medium containing a polar solvent and water in which the inorganic phosphate is insoluble.

3,739,047

REMOVAL OF ORTHOPHOSPHORIC ACID FROM ORGANIC PHOSPHATE ESTERS

James R. Stanford, Sugar Land, and Paul G. Vogelsang, Jr., Houston, Tex., assignors to Nalco Chemical Company, Chicago, Ill.

No Drawing. Filed May 3, 1971, Ser. No. 139,824

Int. Cl. C07f 9/02

U.S. Cl. 260—990 4 Claims

Orthophosphoric acid is removed from organic phosphate esters by extraction with a polar solvent which is a non-solvent for the organic phosphate esters.

3,739,048

METHOD OF GRANULATING POWDER

Kazutoshi Morita, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

No Drawing. Continuation of abandoned application Ser. No. 876,035, Nov. 12, 1969. This application May 26, 1971, Ser. No. 147,244

Int. Cl. G21c 21/02; B02c 23/06

U.S. Cl. 264—.5 6 Claims

This invention relates to a method of granulating a fine powder. A fine powder is difficult to handle when it is molded by compression. Therefore, this invention provides a method in which a powdery foaming agent, that is, a substance which vaporizes upon heating, is previously mixed with the powder of a grain size smaller than the grain size desired, then this mixture is compressed into shaped pieces; these shaped pieces thus obtained are heated to get the foaming agent to vaporize, the expansion force of this vaporization pulverizes the compressed pieces into grains of the desired grain size. The invention also teaches a method which makes it possible to freely control the grain size distribution of the grains to be obtained by altering the grain size of the foaming agent, the ratio of the foaming agent added and the compression force.

3,739,049

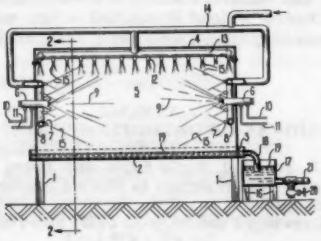
METHOD FOR PRODUCING POWDER COMPOSED OF PRECISELY SPHERICAL PARTICLES

Kazuo Honjo, Nishinomiya, Japan, assignor to Ideki Co., Ltd., Tokyo, Japan

Filed Dec. 4, 1970, Ser. No. 95,403

Int. Cl. B01j 2/06

U.S. Cl. 264—14 1 Claim



Method for producing a synthetic resin powder composed of precisely spherical particles wherein a solution is prepared by dissolving a synthetic resin in a solvent, spraying the solution in the presence of a separation agent, removing the separation agent from the sprayed material after recovery, and drying the resultant product.

3,739,050

PROCESS AND APPARATUS FOR MAKING LARGE-AREA CONCRETE PANELS

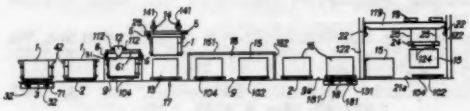
Tihamer Koncz, Witiponerstrasse 297/Buchzelgstrasse, 8053 Zurich, Switzerland, and Max Zimmerli, Zurich, Switzerland; said Zimmerli assignor to said Koncz

Filed Mar. 10, 1971, Ser. No. 122,841

Claims priority, application Switzerland, Mar. 13, 1970, 3,760/70; Germany, Feb. 13, 1971, P 21 06 937.4, P 71 05 480.3

Int. Cl. B28b 5/00, 7/22, 7/26

U.S. Cl. 264—39 17 Claims



A process of and apparatus are provided for mass producing large-area concrete floor and wall slabs wherein liftable inner form panels for forming said slabs are mounted in upright positions on trolley cars, a pair of said movable panels being mounted on each car. A series of cars are moved on tracks to positions at a concreting station wherein the cars are laterally aligned and the pair of movable inner panels on each car is sandwiched between upright stationary outer form panels in a battery of forms provided at the concreting station. The forms are filled with concrete while they are held closed by hydraulic press means, and thereafter the trolley cars are moved on the tracks through a curing oven to an unloading station where the slabs are removed. The movable form panels are cleaned, and the trolley cars and form panels are returned to the concreting station to repeat the cycle. An overhead crane may be provided to lift the movable panels and separate them from the slabs before the trolley cars enter the curing oven.

3,739,051

METHOD OF MAKING A MOLDED FOAM DECORATIVE PRODUCT

George Warren Smith, P.O. Box 506, Pigeon Cove, Mass. 01966

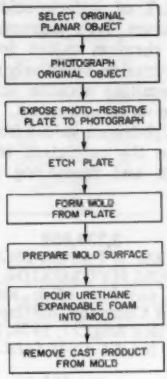
Filed July 21, 1971, Ser. No. 164,512

Int. Cl. B29c 1/02; B29d 27/04

U.S. Cl. 264—48 13 Claims

A method and product of producing a three dimensional colored decorative product. The method preferably comprises photographing a line drawing, employing the resulting photographic transparency to expose a photosensitive plate, etching the plate, forming a flexible elastomer mold from the etched plate and casting a foamable liquid reaction mix in the mold to form a cured non-

resilient urethane foam three dimensional product. The mold interior can be painted with a pigmented coating


SELECT ORIGINAL PLANAR OBJECT
PHOTOGRAPH ORIGINAL OBJECT
EXPOSE PHOTO-RESISTIVE PLATE TO PHOTOGRAPH
ETCH PLATE
FORM MOLD FROM PLATE
PREPARE MOLD SURFACE
POUR URETHANE EXPANDABLE FOAM INTO MOLD
REMOVE CAST PRODUCT FROM MOLD

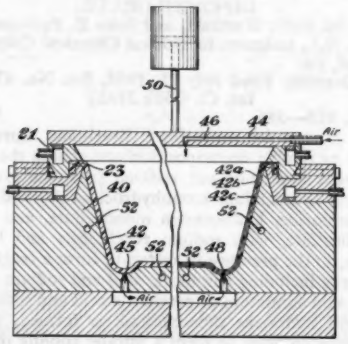
before the urethane foam is cast. The mold can include a frame portion.

3,739,052

SCRAPLESS FORMING OF PLASTIC ARTICLES

Ralph E. Ayres and Kenneth J. Cleereman, Midland, and Walter J. Schrenk, Bay City, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 11, 1970, Ser. No. 62,969
Int. Cl. B29c *17/04*; B29f *5/00*
U.S. Cl. 264—92 **37 Claims**



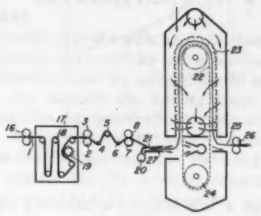
A scrap free process for rapidly making thermoplastic containers wherein the resultant containers can, if desired, be multilayered for vapor or gas barrier or other reasons, or be oriented for toughness and improved stress crack resistance. The containers can be formed from multilayered or homogeneous plastic sheets wherein a relatively thin thermoplastic blank is provided. This blank is lubricated, heated and forged into a desired shape preform with a predetermined lip configuration. The center portion of each said preform is maintained at a forming temperature while the peripheral portion thereof is rapidly brought below the softening point of the plastic resin. The preform is then immediately thermoformed into a container having a desired shape and size, and cooled. If desired, the preform can be forged, cooled and recovered for a subsequent thermoforming operation.

3,739,053

METHOD FOR FIBRILLATING STRETCHED FILM

Masahide Yazawa, Tokyo, Japan, assignor to Polymer Processing Research Institute, Ltd., Tokyo, Japan

Application Apr. 23, 1969, Ser. No. 818,529, which is a continuation-in-part of application Ser. No. 510,546, Nov. 30, 1965, which in turn is a continuation-in-part of application Ser. No. 569,714, Aug. 2, 1966. Divided and this application Sept. 17, 1971, Ser. No. 181,329
Claims priority, application Japan, June 5, 1965, 40/33,241; Apr. 14, 1966, 41/23,966
Int. Cl. D01d *5/22*
U.S. Cl. 264—154 **6 Claims**



The present disclosure is directed to a method and apparatus for manufacturing split-fibers from a uniaxially oriented film obtained from a fiber-forming polymer which comprises slide-rubbing at least one side of the oriented film in the oriented direction under an effective longitudinal tension on at least one rough surface rotating at a peripheral speed different from that of the running speed of the film and having many tiny and rigid projections thereon, said film contacting, in succession, a plurality of said rigid projections which do not pierce the film, thereby fibrillating the film into many fibrils as a result of the shearing stress between film portions passing along the projected portions of the rotating rough surface and those portions passing along the recessed portions of the rotating surface.

3,739,054

PROCESS FOR THE PRODUCTION OF HIGH SHRINKAGE THREADS, YARNS AND FIBERS FROM ACRYLONITRILE POLYMERS

Horst Wieden, Alfred Noga, and Herbert Morzolph, Dormagen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation of abandoned application Ser. No. 755,797, Aug. 28, 1968. This application Apr. 5, 1971, Ser. No. 131,490
Int. Cl. D01f *7/00*; B29c *25/00*
U.S. Cl. 269—206 **5 Claims**

This invention relates to a process for the production of high shrinkage threads, yarn and fibers from acrylonitrile polymers or copolymers containing at least 50% by weight of polymerised acrylonitrile and mixtures thereof, wherein the thread or yarn produced by the dry spinning process is exposed to elevated temperatures in the presence of steam and is then stretched and dried. The spun thread or yarn obtained by the dry spinning process may be contacted with saturated steam under pressure.

3,739,055

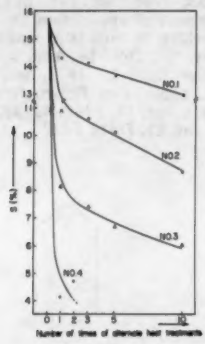
METHOD FOR HEAT TREATING POLYAMIDE FIBERS

Toshiyuki Ueda and Takuji Fukuda, Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Aug. 19, 1970, Ser. No. 65,094
Claims priority, application Japan, Aug. 26, 1969, 44/67,047
Int. Cl. B29c *25/00*
U.S. Cl. 264—342 RE **1 Claim**

Polyamide fibers are stabilized against heat and stress by subjecting the fibers to a heat treatment at a high

temperature for a given time under a high tension and then to a heat treatment at a high temperature for a

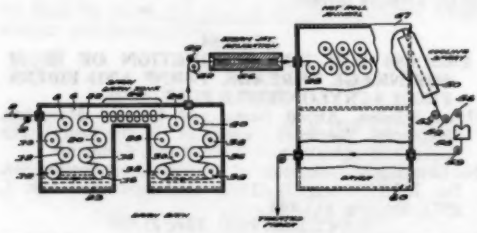


given time under a low tension alternately repeatedly at least 3 times. These polyamide fibers are used for reinforcing elastic materials, particularly for tyre cord.

3,739,056
DRAW/RELAX/ANNEAL PROCESS FOR POLYESTERS

Evan Franklin Evans and John Barry Nash, Kinston, N.C., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of abandoned application Ser. No. 698,623, Jan. 17, 1968. This application Oct. 12, 1971, Ser. No. 182,154
Int. Cl. B29c *25/00, 17/02;* D02j *1/22*
U.S. Cl. 264—290 T **10 Claims**



The dyeability of crystalline, linear condensation polyester fibers is greatly improved by sequentially drawing, relaxing and annealing the fibers. The fibers are drawn at a temperature above their apparent minimum crystallization temperature, relaxed above 180° C., and annealed at a temperature above the relaxation temperature. Apparatus is also disclosed.

3,739,057
PROCESS FOR THE RECOVERY OF RHENIUM AND MOLYBDENUM VALUES FROM MOLYBDENITE CONCENTRATE

Ellsworth W. Daugherty, Golden, Albert E. Erhard, Denver, and James L. Drobnick, Lakewood, Colo., assignors to Molybdenum Corporation of America, Louviers, Colo.

Filed July 9, 1971, Ser. No. 161,111
Int. Cl. C01g *39/00, 47/00*
U.S. Cl. 423—50 **16 Claims**

Process for the recovery of molybdenum and rhenium from molybdenite which comprises: oxidizing the molybdenum in the molybdenite concentrate slurry to the hexavalent form with oxygen or oxygen-containing gases and less than a stoichiometric amount of nitric acid for the sulfide sulfur present, recovering molybdenum and rhenium values from the resulting solution when it contains up to 600 g./l. of sulfuric acid with an amine or quaternary ammonium type extractant, removing the molybdenum and rhenium values from the extractant with ammonium hydroxide, selectively recovering rhenium values from the resulting alkaline solution with a quaternary ammonium type extractant, recovering the remainder of the molybdenum values from the eluate, stripping rhenium from the extractant with perchloric acid or perchlorate salt and recovering rhenium from the stripping solution.

3,739,058
PRODUCTION OF A PAPER PIGMENT GRADE MAGNESIUM HYDROXIDE PRODUCT

John Neil Periard, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Aug. 27, 1970, Ser. No. 67,625
Int. Cl. C01f *5/14*
U.S. Cl. 423—161 **3 Claims**

A method which comprises: slaking dolime, which has a surface area of from about 1 to about 15 $m.^2/g.$, to hydrate the magnesium oxide and calcium oxide; adding the slaked dolime to a Mg^{++} containing brine in an amount sufficient to react up to about 90% of the Mg^{++}, the reaction mixture also containing at least about 200 p.p.m. boron; reacting the $Ca(OH)_2$ of the slaked dolime with the Mg^{++} at a temperature from about 50° C. to 75° C. to form $Mg(OH)_2$; and separating the magnesium hydroxide solids from the residual liquor. The magnesium hydroxide product so made is highly useful as a component in a paper pigment formulation.

3,739,059
PROCESS FOR PREPARING HYDRAZINIUM DIPERCHLORATE

Marvin M. Fein, Westfield, and John E. Paustian, Whippany, N.J., assignors to Thiokol Chemical Corporation, Bristol, Pa.

No Drawing. Filed July 21, 1965, Ser. No. 473,860
Int. Cl. C01b *21/52*
U.S. Cl. 423—386 **5 Claims**

1. A process for preparing hydrazinium diperchlorate product by double decomposition comprising the steps of admixing a hydrazine salt selected from the group consisting of hydrazinium monohydrochloride, hydrazinium dihydrochloride, hydrazinium monosulfate, and hydrazinium disulfate, with sodium perchlorate and hydrogen chloride, in the presence of water, to form a reaction mixture slurry including perchloric acid and sodium chloride, heating said admixture of perchloric acid and sodium chloride until hydrazine diperchlorate is formed, removing the sodium chloride to form a filtrate, cooling the filtrate until hydrazinium diperchlorate is formed, and isolating the hydrazinium diperchlorate product.

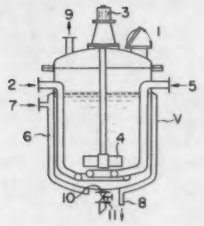
3,739,060
METHOD OF PREPARING CALCIUM SULFITE FOR USE AS A FILLER FOR PLASTICS

Shinichi Tomiyama, Chiba-ken, Rinnosuke Susuki, Tokyo, Hiroshi Hoshi, Chiba-ken, Jiro Saito and Hiro Goto, Tokyo, Kenji Umehara, Chiba-ken, and Kelichi Murakami, Miyagi-ken, Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Dec. 3, 1970, Ser. No. 94,873
Claims priority, application Japan, Dec. 9, 1969, 44/98,829; Feb. 12, 1970, 45/12,092
Int. Cl. C01f *11/48*
U.S. Cl. 423—512 **12 Claims**

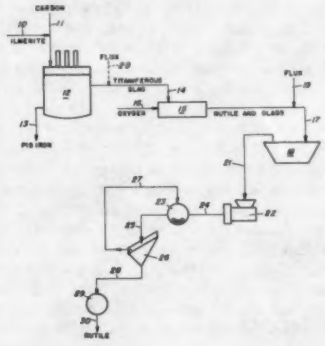
A method of preparing calcium sulfite to be used as a filler for plastics, which comprises the steps of hydrating

calcium oxide with water at elevated temperatures to convert it into calcium hydroxide and introducing sulfur



dioxide gas into the resultant aqueous suspension of calcium hydroxide at high temperatures until the pH of the solution reach the range of 7–13.

3,739,061
MANUFACTURE OF SYNTHETIC RUTILE
William A. Stickney, Willard L. Hunter, and Gerald W. Elger, Albany, and Stanley C. Rhoads, Corvallis, Oreg., assignors to the United States of America as represented by the Secretary of the Interior
Filed Aug. 10, 1971, Ser. No. 173,334
Int. Cl. C01g *23/04*
U.S. Cl. 423—610 **9 Claims**



Synthetic rutile is produced from a reduced titania slag by oxidizing the slag to form rutile in microcrystalline form. These microcrystals are then grown to larger sizes by heating in the presence of a fluxing agent which dissolves metal oxide impurities contained in the slag to form a weak and friable glassy matrix. Rutile crystals are freed from the matrix by comminution and a rutile product fraction is recovered using physical or chemical beneficiation techniques.

3,739,062
DIRECT CONVERSION OF DAWSONITE TO PSEUDOBOEHMITE
Leo R. Barsotti, Pleasanton, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
No Drawing. Filed Oct. 5, 1970, Ser. No. 78,176
Int. Cl. C01f *7/02, 7/30;* **B01j** *11/50*
U.S. Cl. 423—625 **6 Claims**

Dawsonite in aqueous slurry is hydrothermally treated to obtain pseudoboehmite characterized by a surface area in excess of 250 $m.^2/g.$ and an Na_2O impurity level of less than 0.1% by weight. The pseudoboehmite is suitable for the preparation of catalyst supports due to its high surface area, low impurity level and high pore volume.

3,739,063
SHOCK WAVE REACTIONS
James L. Lauer, Penn Wynne, Pa., assignor to Sun Research and Development Co., Philadelphia, Pa.
Continuation-in-part of Ser. No. 795,926, Feb. 3, 1969, abandoned. This application Dec. 29, 1970, Ser. No. 102,521
Int. Cl. C01b *1/03, 13/02*
U.S. Cl. 423—648 **3 Claims**

It has been found that the efficiency of shock wave reactions can be greatly improved by using mercury vapor as a diluent in the reaction gas. By using reduced pressure in the reaction gas - Hg mixture the boiling point of the Hg is reduced and after the reaction the Hg is easily separated merely by allowing the product gas to come to atmospheric pressure whereupon the Hg condenses out. Even at pressures of atmospheric or greater the Hg is easily separated from the product gas because of its high boiling point.

3,739,064
DIHYDROCHALCONE SWEETENING AGENTS
George P. Rizzi, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Filed Sept. 30, 1970, Ser. No. 76,972
Int. Cl. A61k *7/16;* **A23l** *1/26*
U.S. Cl. 424—49 **9 Claims**

Hesperetin dihydrochalcone, and certain homologs thereof, are dissolved in appropriate organic solvents and aqueous-organic solvents to provide novel sweetening compositions useful in flavoring edible products.

3,739,065
ANHYDROUS, STABLE SMALLPOX VACCINE COMPOSITION FOR PERCUTANEOUS APPLICATION AND METHOD OF PREPARING THE SAME
Bruno Mettier, Thorishaus, and Mirko Majer, Bern, Switzerland, assignors to Schweizerisches Serum- und Impfinstitut und Institut zur Erforschung der Infektions-Krankheiten, Bern, Switzerland
No Drawing. Filed Dec. 22, 1971, Ser. No. 211,095
Claims priority, application Switzerland, Jan. 4, 1971, 12/71
Int. Cl. A61k *9/06;* **C12k** *5/00*
U.S. Cl. 424—78 **8 Claims**

A smallpox vaccine composition which is stable for extended periods without refrigeration and ready for direct percutaneous administration is a stiff ointment essentially consisting of lyophilized vaccinia virus and polyorganosiloxane having a viscosity of 30,000 to 100,000 centistokes at 20° C. and a flow limit of more than 10, but not substantially more than 500 dynes per square centimeter. It is prepared by dispersing the lyophilized virus in a liquid polyorganosiloxane of low viscosity which is volatile at ambient temperature, mixing the dispersion so obtained with the polyorganosiloxane of the desired high viscosity, and removing the volatile liquid by evaporation in a scavenging gas or a vacuum. The ointment may be administered percutaneously without dilution or other preparation in a manner conventional in itself. It does not tend to run off the inoculated skin under the force of gravity.

ERRATUM

For Class 424—273 see:
Patent No. 3,738,987

ELECTRICAL

3,739,066
ELECTRODE REMELTING ARRANGEMENT

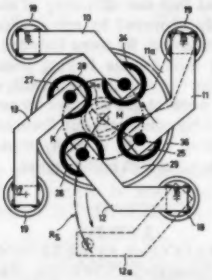
Edgar Ermold, Bruchkobel; Hans F. W. Schwartz-Domke, Hanau; Helmut Scheidig, and Karl-Georg Redel, Rodenbach, all of Germany, assignors to Leybold-Heraeus-Verwaltung GmbH, Cologne-Bayental, Germany

Filed Dec. 3, 1971, Ser. No. 204,540

Claims priority, application Germany, Mar. 9, 1971, P 21 11 047.4

Int. Cl. H05b *3/60, 7/10*

U.S. Cl. 13—9 **6 Claims**



An arrangement for remelting electrodes, in which a plurality of electrode carrying arms are distributed about the periphery of a chill mold. The electrode carrying arms are pivoted in a horizontal plane, with the radius from the pivoting center to the axis of the electrode carried by an arm, passing through the center of the chill mold. The electrode carrying arms are also pivotable so that the axes of the electrodes carried by the arms, lie on concentric circles within the chill mold.

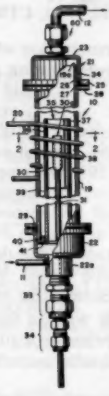
3,739,067
FURNACE FOR VOLATILIZING MATERIALS

Henry M. Stahr, Odgen, and Andrew J. Wunderlich, Ames, both of Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed July 5, 1972, Ser. No. 269,117

Int. Cl. H05b *5/12*

U.S. Cl. 13—26 **8 Claims**



An induction furnace for rapidly heating substances by induction to volatilize them includes a split cylindrical carbon susceptor spaced inwardly of a cylindrical outer wall and surrounding a carbon cup holding the substance for bringing the temperature of the hot zone up to as high as 2000°C. very rapidly. A metal-to-metal seal is provided for sealing a tantalum rod holding the cup while permitting adjustment of the position of the cup axially of the cylindrical outer wall.

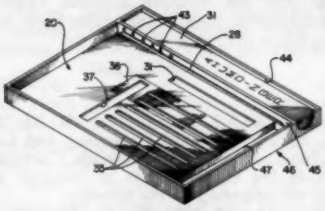
3,739,068
MONETARY DECODIFYING DEVICE

Bruce F. Harkins, Vernon Road, Fayette, Ala.

Filed May 7, 1971, Ser. No. 141,277

Int. Cl. G09c *1/00*

U.S. Cl. 35—2 **5 Claims**



This decodifying device comprises a box-like structure comprising backing and front face parts having guide slots in which digit bearing strips are slidable for positioning toward code letters on a code word lying laterally adjacent to the digit slide strips with the spacings between the digits and the letters of the code word being the same and a window opening in which the final result translated from the letters to monetary value may be read. Holes are provided in the digit strips to which the pointed end of an implement is applied for moving the strips to locations corresponding to the letters of the code word. The code word may be supplied from a removable code strip extended into a slot from one end of the device, while in one form of the device only a single work hole is provided in the digit strip and in another form of the device there is provided a series of holes corresponding respectively to the 10 digits on the strip. With the implement the strip is brought to a stop at the end of the slot in the front face thereby minimizing the searching required as with the first form of the invention. An L-shaped code word card is provided to locate the code word both in a location for use with the digit strips in another location where the code word can be readily observed. A reset device is provided with the second form of the invention to bring all of the strips at an equal location preparatory to use of the device.

3,739,069
FILM VIEWER

Arthur Sandmeier, 78 Chemin de la Caille, Neuchatel 2000, Switzerland

Filed Aug. 13, 1971, Ser. No. 171,533

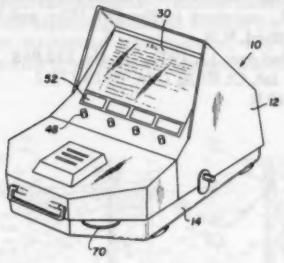
Claims priority, application Great Britain, Aug. 24, 1970, 40,700/70

Int. Cl. G09b *3/06*

U.S. Cl. 35—9 E **12 Claims**

A viewing machine for projecting an image from a strip of film or the like comprising a body having a screen and optical means for projecting the image on the screen. The strip is wound in cartridge at least in part about two spaced reels. The

strip is exposed between the reels. Means are provided for mounting the reels on a pair of rotatable studs to maintain the



exposed portion operatively related to the optics. The studs are manually movable to move the strip past the optical means to project selected portions of the strip on the screen.

3,739,070
TEACHING ASSIST

David B. Rosen, 31 Arthur Avenue, Apt. 12, East Providence, R.I., and William P. Torrey, 1 Whetstone Drive, Apt. 5, Gaithersburg, Md.

Filed June 30, 1971, Ser. No. 158,204
Int. Cl. G09b *1/00*
U.S. Cl. 35—48 A 1 Claim

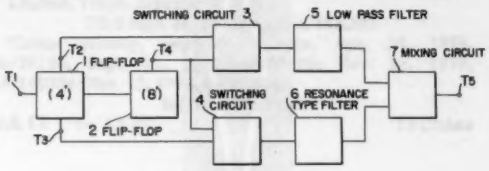
This invention pertains to a teaching assist or device which includes a base sheet printed on two sides after which it is folded. A set of questions or instructions printed on the front or face side of the base sheet and visible through an overlying transparent sheet is attached to the end of said base sheet. On this transparent overlay the student writes his answer by means of a wax pencil or the like. After the student has completed the instructions or applied the indicated answers to the outer surface of the transparent sheet in accordance with the printed instructions the transparent sheet is lifted and the folded end of the base sheet is swung onto the face surface so as to bring into view the printed answers on the back of the base sheet. The transparent sheet is then lowered to lay on the folded portion and the correct answers or instructions printed on said back surface of the base sheet. The student's answers as written on the transparent sheet are compared with the printed answers after which the wax marks are erased from the transparent sheet and the assist is again folded for use by another student.

3,739,071
TONE-COLOR FORMING CIRCUIT IN ELECTRONIC MUSICAL INSTRUMENT

Naoyuki Niinomi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed Dec. 29, 1971, Ser. No. 213,458
Claims priority, application Japan, Dec. 29, 1970, 45/121658
Int. Cl. G10h *1/06*
U.S. Cl. 84—1.19 4 Claims

A tone-color forming circuit in an electronic musical instrument comprises fundamental tone and second harmonic tone producing circuits operable in mutual in-phase relationship, a first switching circuit of a longer decaying time connected with the outputs of the fundamental and second harmonic producing circuits, a second switching circuit of a shorter decaying time connected with the output of the fundamental tone producing circuit and with the phase-reversed output of the second harmonic producing circuit, a first filter and a

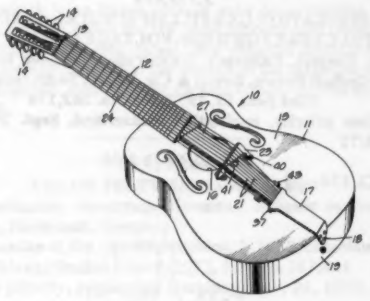


second filter of different characteristics coupled respectively with the outputs of the first and second switching circuits, and a mixing circuit, whereby a musical tone signal of double-fold decay can be obtained from the mixing circuit.

3,739,072
GUITAR CONSTRUCTION

Walter E. Smith, P. O. Box A, Payette, Idaho

Filed Nov. 26, 1971, Ser. No. 202,371
Int. Cl. G10d *3/00*
U.S. Cl. 84—291 5 Claims



An acoustic guitar having a neck attached to a hollow body is provided with a compression strut which relieves the hollow body of forces produced by tension of the strings. The compression strut extends from the string anchor to the neck over the sound opening in the upper surface of the body. The compression strut also supports the string-contacting bridge which is attached to said upper body surface. An adjustable support is positioned in the clearance space between the compression strut and said upper body surface.

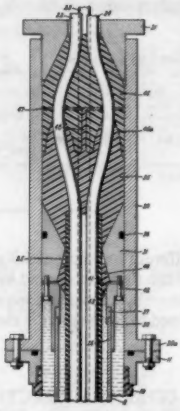
3,739,073
TERMINATION FOR ELECTRIC CABLE AND FLUID FILLED CABLE CONDUIT

Harold N. Schneider, Springfield, and J. Kenneth Wittle, Berwyn, both of Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed May 5, 1972, Ser. No. 250,658
Int. Cl. H02g *15/04*
U.S. Cl. 174—23 R 8 Claims

An electric cable emerging from a liquid-filled chamber under pressure, such as a deep well casing, is led through a high pressure hose or other conduit to a self sealing terminator in which the conduit and cable sheathing is terminated and from which the cable conductors alone emerge. The terminator comprises a tubular shell having a sealed tubular piston therein and a closure cap at its outlet end. The pressure hose is connected to the incoming end of the terminator shell and the cable is led into and through the piston. All cable sheathing

and armor is terminated at the piston and the cable conductors continue through the closure cap. A body of resilient sealing material between the piston and closure cap is compressed by fluid pressure on the piston to seal against the cable conductors.



3,739,074

INSULATION GAS-FILLED TUBULAR CASING STRUCTURE FOR HIGH-VOLTAGE CONDUCTOR

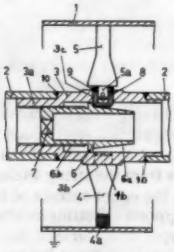
Dieter Floessel, Fislisbach, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed June 13, 1972, Ser. No. 262,174

Claims priority, application Switzerland, Sept. 16, 1971, 13539/71

Int. Cl. H01b 9/06

U.S. Cl. 174—28 6 Claims



A high-voltage tubular electrical conductor is encapsulated within an insulation gas filled rectilinear tubular casing and supported centrally within the casing by longitudinally spaced support-insulators each of which is provided with three legs spaced 120° apart about the conductor. Two of the legs are fixedly secured to the conductor structure and include rolling means in the form of balls at their outer ends to facilitate abrasion-free insertion of the conductor-support insulator assembly within the casing. The third leg is supported by the tubular conductor for movement in a radial direction by a drive mechanism to enable the leg to be moved from radially inward position establishing an initial clearance with the wall of the casing during insertion of the conductor and support insulator assembly to a radially outward position establishing a spring-loaded elastic pressure contact with the casing wall thereby to secure the support-insulator in position against longitudinal displacement. The drive mechanism for the radially displaceable leg is a tapered screw which, when rotated by a key inserted through the conductor, advances the tapered drive surface longitudinally and forces the leg radially outward.

3,739,075

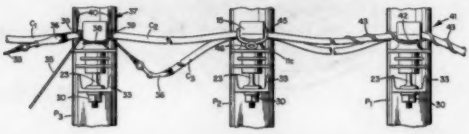
CABLE STRINGING AND INSULATING APPARATUS AND METHOD

Leonard P. Jean, Nashua, and William L. Hendrix, Amherst, both of N.H., assignors to Hendrix Wire and Cable Corporation, Milford, N.H.

Filed Apr. 12, 1971, Ser. No. 132,965

Int. Cl. H02g 1/04; H01b 17/22

U.S. Cl. 174—40 R 5 Claims



Synthetic material, conductor enclosing insulator apparatus for aerial electric power distribution and transmission circuits. Eyelet insulator apparatus for initial stringing and permanent supporting of wires or conductors of aerial electric power circuits. Method of installing open cable or bare wire conductors of electric power distribution or transmission circuits by stringing the conductors through and securing them to overhead mounted insulators of such circuits.

3,739,076

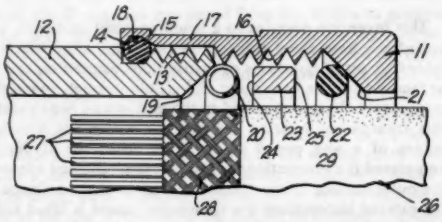
ELECTRICAL CABLE TERMINATING AND GROUNDING CONNECTOR

Lawrence Schwartz, 831 S. Main St., Burbank, Calif.

Filed Apr. 17, 1972, Ser. No. 244,810

Int. Cl. H02g 15/02; H01r 17/18

U.S. Cl. 174—78 8 Claims



A terminating and grounding connector for electrical cables and the like. The connector includes a housing and an end member screw threadedly mounted on said housing. A resilient annular electrically conductive coil spring is mounted between adjacent portions of the housing and end member. As the end member is rotatably threaded toward the housing, an inwardly directed annular bevel engages the spring and moves it inwardly toward an electrically shielded portion of the cable. The spring is compressed circumferentially so that its inner periphery makes electrical grounding contact with the shielded portion of the cable. In an alternative embodiment, a plurality of separate shields from the interior of a cable are passed through and held between the coils of the spring.

3,739,077

MULTIPLE CONDUCTOR BUNDLE SUPPORT AND SPACER

Paul F. Winkelman, Beaverton, Oreg., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

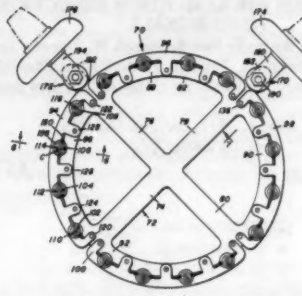
Filed May 31, 1972, Ser. No. 258,143

Int. Cl. H02g 7/00

U.S. Cl. 174—149 R 9 Claims

Devices maintaining the structural integrity and stability of multiple conductor bundles of a high voltage transmission line

are each constituted by a unitary circular member having a plurality of conforming members conjoined therewith in a connective relationship which faces openings of essentially semi-cylindrical complementary recesses therein so as to form an array of corresponding passages wherein the conductors of a bundle are maintained interconnected and thereby structurally supported in an expanded spatial disposition. Spaced,



interjacent coacting portions of the respective members obtain the requisite alignment of the recesses, and facilitate the security of the assembly as its respective passages are adapted to have clamped therein individual conductors of the bundle. Embodiments of the assembly having a reinforced unitary member including extensions thereof for junctures to insulators facilitate connection of the conductor bundle to a transmission line tower.

3,739,078

APPARATUS FOR REPRODUCING COLORED IMAGES

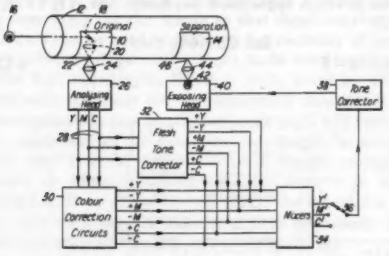
Peter C. Pugsley, Pinner, and Mouayed E. Dobouny, Dartford, both of England, assignors to Crosfield Electronics Limited, London, England

Filed Jan. 19, 1971, Ser. No. 107,674

Claims priority, application Great Britain, Jan. 28, 1970, 4,147/70

Int. Cl. G03f 3/08

U.S. Cl. 178—5.2 A 5 Claims



In color picture reproducing apparatus of the kind in which a color picture analyzing scanner scans a color picture, element by element, and analyzes its color components to provide a number of electric signals representing respectively the densities of the different color components at the scanned elements, a circuit for changing a specified hue (such as flesh tone) recognizes the combination of signals representing the specified hue at any element and applies a correcting signal to one or more of the color channels to produce a desired modification of the hue.

3,739,079

COLOR TELEVISION CAMERA USING ONLY TWO CAMERA TUBES

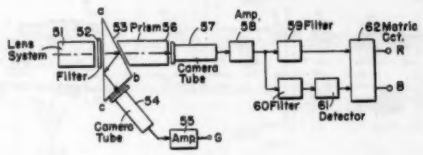
Toshimasa Noda; Masafumi Hanaoka, and Akiyoshi Kouno, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Sept. 21, 1971, Ser. No. 182,353

Claims priority, application Japan, Apr. 30, 1971, 46/29196; Sept. 22, 1970, 45/83589; Nov. 13, 1970, 45/100386; Nov. 13, 1970, 45/113443

Int. Cl. H04n 9/08

U.S. Cl. 178—5.4 ST 13 Claims



A color television camera employs only two camera tubes. One tube is a color pick-up tube for obtaining a chrominance signal comprising individual signals corresponding to respective two color components of the three primary colors, and the other of which is an image pick-up tube for obtaining a luminance signal. A target for the color pick-up tube comprises a photo-diode-array-type target, and includes apparatus for color separation disposed at the surface of the target on which light is projected, such that the camera optical system may be simplified.

3,739,080

COLOR TELEVISION CAMERAS

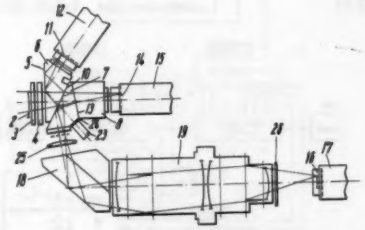
Horst Bachmann, Darmstadt, Germany, assignor to Fernseh GmbH, Darmstadt, Germany

Continuation of Ser. No. 85,923, Nov. 2, 1970, abandoned. This application June 9, 1972, Ser. No. 261,441

Claims priority, application Germany, Nov. 26, 1969, P 19 59 328

Int. Cl. H04n 9/08

U.S. Cl. 178—5.4 E 5 Claims

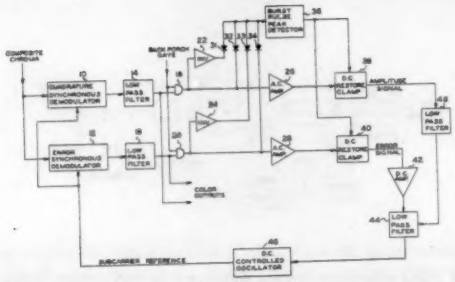


An optical system for a color television camera comprises a beam-splitting arrangement for separating an incident light beam into three partial beams corresponding respectively to three different parts of the visible spectrum, the three partial beams being supplied to the photoelectric cathodes of respective camera tubes. One of the partial beams is supplied to the respective photoelectric cathode by way of an intermediate lens, so that the size of the image on that photoelectric cathode is different from the size of the images on the other two photoelectric cathodes.

3,739,081
METHOD AND APPARATUS FOR COLOR SUBCARRIER GENERATION

Stephen A. Roth, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation-in-part of Ser. No. 101,915, Dec. 28, 1970, abandoned. This application Mar. 22, 1971, Ser. No. 126,702
Int. Cl. H04n 9/46
U.S. Cl. 178—5.4 R **34 Claims**

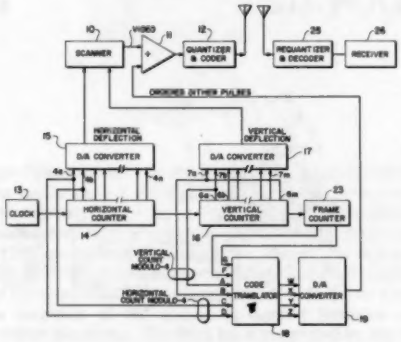


A color subcarrier signal is gated by DC restoration subsequent to synchronous demodulation. DC restoration is provided the demodulated signal relative to detected peaks of the color subcarrier synchronizing burst envelope. The DC restored signals are employed for controlling a color subcarrier oscillator producing the local subcarrier frequency utilized for the synchronous demodulation.

3,739,082
ORDERED DITHER SYSTEM

Bernard Lippel, West Long Branch, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 29, 1972, Ser. No. 230,375
Int. Cl. H04n 7/12
U.S. Cl. 178—6 **12 Claims**

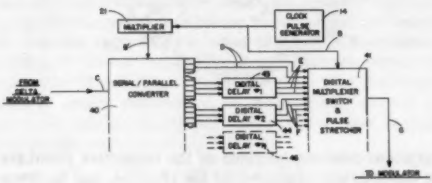


An improved system for transmission of either still or moving pictures, with or without scan interlace, and using only coarse quantization of the picture luminance, for conserving transmission channel capacity. This improvement is accomplished by combining the picture with a novel, two-dimensional ordered dither pattern. This pattern is arranged so that, without requiring expensive and complex synchronous subtraction of the dither signal at the receiver, and while operating with coarse quantization, a picture having relatively few disturbing noise structures, and of generally better quality, can be obtained than has been possible with dither systems heretofore. In addition, the dither pattern can be oriented so as to provide negligible large area flicker in those scanning systems which use line interlace. Finally, a reduction in aliasing effects, as well as further reduction in regular noise artifacts visible to the eye with ordered dither, can be achieved by causing the dither pattern to vary as a function of time.

3,739,083
DIGITAL SYSTEM FOR BAND WIDTH REDUCTION OF VIDEO SIGNALS

Teague N. Leiboff, Redondo Beach; Joseph W. Powers, Jr., Los Angeles, and George H. Towner, Palos Verdes Peninsula, all of Calif., assignors to Northrup Corporation, Los Angeles, Calif.

Filed Aug. 4, 1971, Ser. No. 168,954
Int. Cl. H04n 7/12
U.S. Cl. 178—6 **6 Claims**

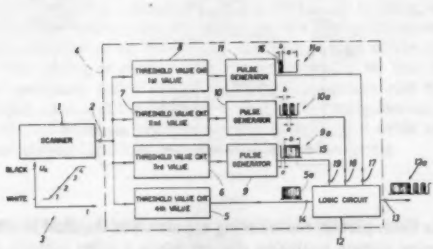


Analog video signals which have a duty cycle which is substantially less than a total timing cycle are converted from analog to digital form in an analog to digital converter. These digital signals are fed to a time buffer where they are distributed over the entire timing cycle to lower their frequency so that the effective band width of such signals is substantially reduced. The time buffered signals are modulated onto an appropriate transmission carrier for transmission on a radio link or the like. These signals are received at the receiving station and appropriately processed to convert them back to their original analog form. In this manner, the band width of the transmission channel needed for transmitting the video signals may be substantially reduced.

3,739,084
FACSIMILE SYSTEM

Frank-Armin Heinrich, Korb, Germany, assignor to Robert Bosch Elektronik GmbH, Berlin, Germany

Filed Apr. 1, 1971, Ser. No. 130,378
Claims priority, application Germany, Apr. 11, 1970, P 20 17 432.7
Int. Cl. H04n 1/40
U.S. Cl. 178—6 **6 Claims**



An improved facsimile system wherein pictures having black, white and gray values of brightness are reproduced by means of a facsimile recorder which reproduces only black and white values of brightness. The scanning voltage signal produced by the line-by-line photoelectric scanning of the picture to be transmitted is converted, either at the transmitting location or at the receiving location, into signals representa-

tive of at least three different amplitude ranges. A low d.c. voltage signal is produced when the amplitude of the scanning voltage signal is in the lowest amplitude range which includes the amplitude value for "white," a high d.c. voltage signal is produced when the amplitude of the scanning voltage signal is in the highest amplitude range which includes the amplitude value for "black," and a periodic pulse sequence output signal is produced when the amplitude of the scanning voltage signal is in the intermediate range. Only the output signal corresponding to the highest determined amplitude of the scanning voltage signal is utilized to control the facsimile recorder, with the periodic pulse sequence signal causing the recorder to produce recordings having the effect of "gray" values of brightness. Preferably the intermediate amplitude range is subdivided into a plurality of amplitude ranges each of which is associated with a different periodic pulse sequence signal and with the sum of the pulse widths per unit time in each periodic pulse sequence being greater as the amplitude range associated therewith increases so that shades of gray may be reproduced.

3,739,085

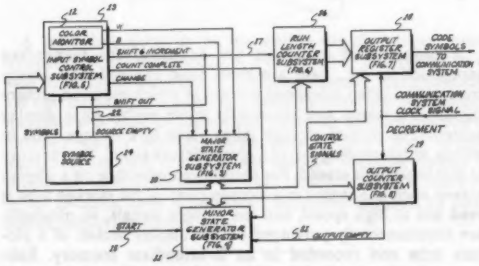
CODING TECHNIQUE

George Rosen; Paul Epstein, both of Brookline, and Robert E. Wernikoff, Cambridge, all of Mass., assignors to Addressograph Multigraph Corporation, Cleveland, Ohio

Filed July 9, 1971, Ser. No. 161,074

Int. Cl. H04n 7/12

U.S. Cl. 178—6 **21 Claims**



A coding technique particularly suited for run length coding of facsimile signals and operative to provide binary symbol codes of successively larger code word size as necessary to describe the numerical equivalent of the run length of each facsimile signal of the same reflectivity characteristic. In certain code words specific bit arrangements are reserved from use in describing the run length so that these reserved bit arrangements can be used to indicate the necessity of proceeding to a subsequent, generally larger, code word to completely describe that run length. When a code word is ultimately reached with sufficient size to numerically describe or finish the description of a run length, that code word will contain the binary equivalent of the numerical run length, or remainder thereof, and indicate subsequent run length coding is to represent an opposite reflectivity characteristic in the facsimile signal. The coding scheme, that is the succession of different code word sizes, is tailored to each reflectivity characteristic to provide a more efficient coding scheme.

3,739,086

FRAME ADDRESSING SCHEME FOR VIDEO RECORDING MEDIUM

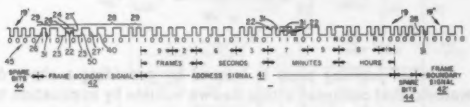
John T. Heather, Sunnyvale, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Oct. 27, 1969, Ser. No. 870,680

Int. Cl. G11b 5/06, 23/42; H04n 5/78

U.S. Cl. 178—6.6 A **16 Claims**

Consecutive frames of a magnetic video tape are addressed consecutively by unique frame identifying signals carrying information recorded in a self-clocking NRZ format along a separate cue track of the tape as sequences of magnetic flux transitions between different magnetic states at discrete intervals. Each unique frame identifying signal includes a block control information recorded as one sequence of magnetic flux transitions along first lengths of the track and a block unique address signal information recorded as a different sequence of magnetic flux transitions along second lengths of the track alternating with the first lengths. The unique address signal information sequence of each unique frame identifying signal is different, carrying address information identifying one particular frame. The control information sequences of all of the unique frame identifying signals are identical and are



recorded exclusively along the first lengths of the cue track. Each control information sequence includes a first sequence of magnetic flux transitions in a boundary segment at each end of the first length and a second sequence of magnetic flux transitions in a segment of the first length interjacent the boundary segments. A magnetic flux transition occurring in each second sequence a selected number of transitions from the first sequences is from the same one of the different magnetic states to the other of the magnetic states in all of the first lengths of the track. Decoding means is responsive to the flux transitions forming the control information sequences to provide tape speed, tape transport direction and clock rate information used to decode the reproduced address signal information.

3,739,087

MULTI-POINT DISTRIBUTOR HEAD FOR SIGNAL RECORDING OR THE LIKE

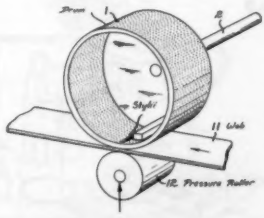
Kenneth A. Metcalfe, Lockleys, and William H. Lowe, Beaumont, both of Australia, assignors to The Commonwealth of Australia, care of The Secretary, Department of Supply, Parks, Canberra, Australia

Filed Oct. 26, 1971, Ser. No. 192,386

Claims priority, application Australia, Oct. 26, 1970, 2956/70

Int. Cl. G11b 11/16

U.S. Cl. 178—6.6 A **14 Claims**

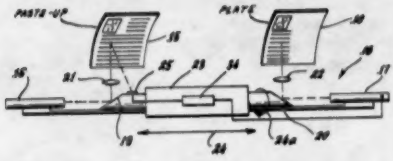


The method of signal transfer by multi-point distributor heads using a multiplicity of individually insulated conductive members and applying an electrical signal to the conductive members selectively from one side of the head by means of stylii adapted to impress or receive a signal, the other side of the head being in contact with a web either adapted to receive a signal or containing a signal.

3,739,088
PRINTING PLATE PRODUCTION METHOD AND APPARATUS

Robert M. Landsman, Norwalk, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed May 20, 1971, Ser. No. 145,187
Int. Cl. G01d 15/14; H04n 1/24
U.S. Cl. 178—6.6 TP 3 Claims

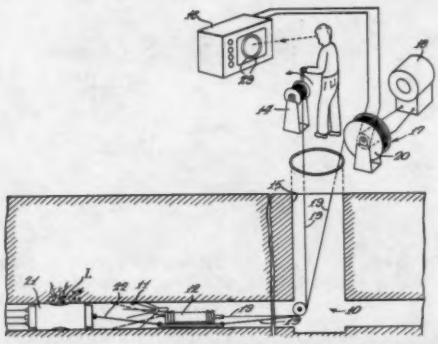


A relief printing plate is formed by providing a sheet of material that collapses within its own volume by application to a surface of the sheet of a particular type of radiant energy, such as infrared radiation, this surface of the sheet being covered by a film of material which reflects said radiation. A relief pattern is formed by vaporizing selected areas of the reflective film to uncover underlying areas of the sheet so that the unvaporized reflective film forms a reflective template of the pattern to be in relief, and thereafter aupplying the radiation to the surface to collapse the uncovered areas of the sheet and leave in relief the areas shielded by the reflective template. In a preferred form the reflective film is initially covered by a layer of material that absorbs sufficient heat from a beam of another type of radiant energy to vaporize the reflective film immediately underlying a spot on the absorbent layer heated by the beam. A paste-up or other graphic representation of material to be reproduced in relief is scanned to produce electric signals corresponding to contrasts in the scanned material and the signals are applied to modulate a beam of radiant energy, which is scanned over the absorbent layer in synchronism with the scanning of the graphic representation, so that the beam heats selected areas of the absorbent film to vaporize underlying areas of the reflective film in a pattern such that the unvaporized reflective film is in a pattern corresponding to the pattern to be reproduced in relief.

3,739,089
APPARATUS FOR AND METHOD OF LOCATING LEAKS IN A PIPE

Roy C. Lstall, Des Plaines, Ill., assignor to Conco Inc., Mendota, Ill.

Filed Nov. 30, 1970, Ser. No. 93,610
Int. Cl. H04n 7/18
U.S. Cl. 178—6.8 10 Claims



An apparatus for locating leaks in a pipe, such as a sewer pipe, wherein a viewing device such as a television camera is moved longitudinally through the pipe. The image seen by the camera is displayed on a television receiver. The camera utilizes a relatively long focal length lens so that only a short length of pipe is sharply in focus at each position of the camera. Means are provided for indicating the location of the camera as it is moved along the pipe so that when a leak is found, the location of the camera and corresponding, the location of the leak are accurately indicated to the user. The apparatus utilizes only the image of the pipe and the leak itself for locating the leak.

3,739,090
PROCESS AND CIRCUIT ARRANGEMENT FOR REPRODUCTION OF A SLOWLY TRANSMITTED PICTURE IN VIDEO TELEPHONY

Wolfgang Heberle, Munich; Siegfried Guntersdorfer, Sauerlach, and Peter Klein, Gauting, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

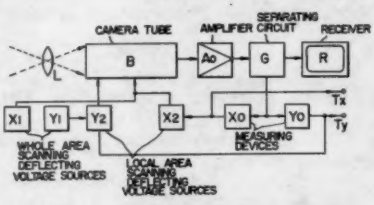
Filed July 6, 1971, Ser. No. 159,994
Claims priority, application Germany, July 6, 1970, P 20 33 441.2
Int. Cl. H04n 7/12, 7/18
U.S. Cl. 178—6.8 6 Claims

A process and apparatus are described for flicker-free reproduction, e.g., over a narrow band channel, of a slowly transmitted video telephony picture in which received picture signals are stored and repeatedly made visible on a display screen. The picture storage takes place in a storage tube in which, at the reading out of a given picture signal, the memory at this location is erased. For picture reproduction on a display screen each line stored in a storage plate of the storage tube is read out at high speed, and the picture signals, so obtained, are simultaneously portrayed on the display screen of a picture tube and recorded in an intermediate memory. Subsequently, the signals delayed by the intermediate memory are re-recorded at the same location of the previously read-out line. Thereafter, the next and all further stored lines of each picture are successively read out, reproduced, intermediately stored and re-recorded back in the picture storage tube in the same manner.

3,739,091
METHOD AND APPARATUS FOR DISPLAYING IMAGE AND MEASURING OBJECT THEREIN

Kazuo Kurasawa, Hamamatsu, Japan, assignor to Hamamatsu TV Co. Ltd., Hamatsu-shi, Shizuoka-ken, Japan

Filed Apr. 26, 1971, Ser. No. 137,365
Claims priority, application Japan, Apr. 24, 1970, 45/34765
Int. Cl. H04n 5/06, 5/22, 7/18
U.S. Cl. 178—6.8 2 Claims



A method and device for displaying an image including an object to be measured on the screen of a television receiver

and for measuring movement and other characteristics of the object in a measuring device so composed that a region of the image including the object is locally scanned for a predetermined number of times in each flyback period between consecutive horizontal scannings for the whole area of the image, a first video signal thus obtained by the scannings of the whole area of the image being supplied to the receiver to be displayed therein, and a second video signal obtained by the local scannings of the region being supplied to the measuring device.

3,739,092

TELEVISION SIGNAL BLANKING

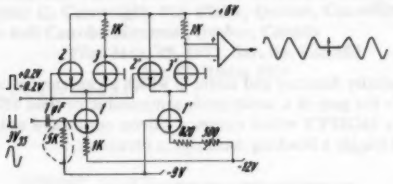
Ernst Legler, Seeheim, Germany, assignor to Fernseh GmbH, Darmstadt, Germany

Filed Sept. 2, 1971, Ser. No. 177,346

Claims priority, application Germany, Sept. 8, 1970, P 20 44 352.1

Int. Cl. H04n *5/14*

U.S. Cl. 178—7.1 **6 Claims**



A television signal to be blanked is supplied to an input transistor of a first cascade; a variable D-C is supplied to a base of an input transistor in a second cascade. Each cascade has two output transistors, with nullers connected to the input transistors. A base of one output transistor in each cascade is supplied with a blanking pulse; bases of the other output transistors are held at a reference voltage. A ballast resistor is connected across outputs in each cascade, and a blanked signal is taken from a difference amplifier supplied by like-biased output transistors.

3,739,093

DEVICE FOR REPRODUCING INFORMATION RECORDED IN A HOLOGRAM

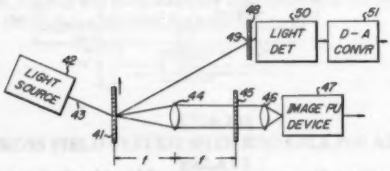
Yasunori Kanazawa, Hachioji, and Yasutsugu Takeda, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 13, 1971, Ser. No. 162,143

Claims priority, application Japan, July 17, 1970, 45/62056

Int. Cl. H04n *5/30*

U.S. Cl. 178—7.2 **8 Claims**



A device for reproducing picture information and sound information which are recorded in a hologram in the overlapped manner, wherein the reproduction is performed while the hologram is continuously moved in one direction, a convex lens being used for the reproduction of the picture information while the sound information is reproduced directly from the moving hologram, whereby the picture information is reproduced at a fixed place while allowing a concurrent and continuous reproduction of the sound information.

3,739,094

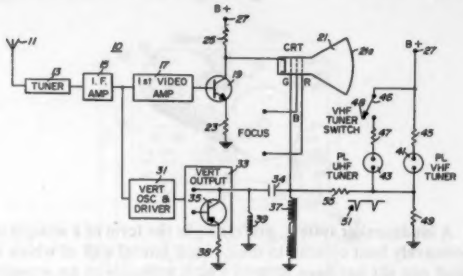
GASEOUS LIGHT FIRING CIRCUIT FOR TELEVISION RECEIVERS

Donald E. Griffey, Skokie, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Sept. 8, 1971, Ser. No. 178,770

Int. Cl. H04n *5/44*

U.S. Cl. 178—7.3 R **4 Claims**



A gas discharge lighting device useful as a pilot light in a television receiver has for its primary voltage supply a steady state voltage input means greater than the sustaining voltage potential required for operating the lighting device but less than the firing voltage potential required for consistently and continuously firing the lighting device into operation. In order to assure firing the lighting device without altering the voltage level of the steady state voltage input means, a pulsating voltage input means having recurring voltage pulses of relatively short duty cycle are applied to the lighting device so as to be additive with said steady state voltage potential.

3,739,095

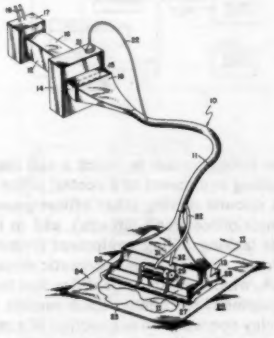
SCANNING APPARATUS

Milton Alden, Needham, Mass., assignor to Alden Research Foundation, Brockton, Mass.

Continuation of Ser. No. 765,949, Oct. 8, 1968, abandoned. This application Aug. 2, 1971, Ser. No. 168,406

Int. Cl. H04n *1/24, 3/02*

U.S. Cl. 178—7.6 **1 Claim**



This invention relates to scanning apparatus and, more particularly, to equipment for reading visual material and converting it to an electrical signal representative of the visual image for retransmission to a recorder located at a remote location.

3,739,096

LOUDSPEAKER SYSTEM HAVING A CARDIOID DIRECTIONAL RESPONSE PATTERN

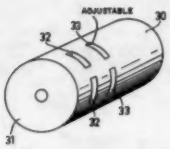
Wilhelmus Hermanus Iding, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corportion, New York, N.Y.

Filed Jan. 12, 1971, Ser. No. 105,908

Claims priority, application Netherlands, Jan. 31, 1970, 7001421

Int. Cl. G10k *13/00*

U.S. Cl. 179—1 E 9 Claims



A loudspeaker system, preferably in the form of a straight or concavely bent column in the or each lateral wall of which at least one slit has been formed which acts only as an acoustic resistor. This ensures that the cardioid directional response pattern remains constant over a wide frequency range. The directional response pattern may be influenced by varying the location and/or the width of the or each slit.

3,739,097

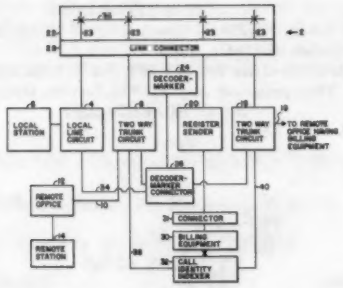
TELEPHONE MESSAGE ACCOUNTING SYSTEM

Derek Leyburn, Ottawa, Khurshid Ahmad, Kanata, and Robert Thomas Milne, Toronto, all of Ontario, Canada, assignors to The Bell Telephone Company of Canada, Montreal, Quebec, Canada

Filed Sept. 30, 1971, Ser. No. 185,300

Int. Cl. H04m *15/00*

U.S. Cl. 179—7.1 R 5 Claims



A telephone billing system in which a call identity indexer (CII) of the billing equipment of a central office is connected both to trunk circuits serving other offices possessing billing equipment (inter-office trunk circuits), and to trunk circuits serving offices lacking billing equipment (remote trunk circuits). Each trunk circuit has an automatic message accounting relay which, when operated, identifies that trunk circuit to the billing equipment for billing. Each remote trunk circuit has a bridge relay operative on connection of a register-sender thereto, during a call by (but not to) the remote trunk circuit, to operate the AMA relay therein. When a local line circuit makes a long distance call, it operates a local relay in the decoder-marker, and the local relay causes the AMA relay of the called trunk circuit to operate. Double billing is avoided since when a remote trunk circuit calls another remote or inter-office trunk circuit, neither the local relay, nor the bridge relay of the called trunk circuit, operates.

3,739,098

SYSTEM FOR THE REMOTE SUPERVISION OF MULTICHANNEL PCM REPEATERS

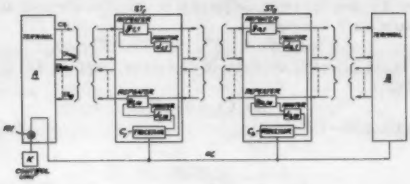
Roberto Camiciottoli, and Guiseppe Grossi, both of Milan, Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.P.A., Milan, Italy

Continuation-in-part of Ser. No. 198,788, Nov. 15, 1972. This application Mar. 27, 1972, Ser. No. 238,314

Claims priority, application Italy, Mar. 26, 1971, 22336 A/71

Int. Cl. H04j *3/02*

U.S. Cl. 340—258 D 6 Claims



A proximity detector and alarm in which an antenna is connected to the gate of a metal oxide semiconductor field effect transistor MOSFET which causes a silicon controlled switch (SCS) to trigger a blocking oscillator. a processor

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3,739,099

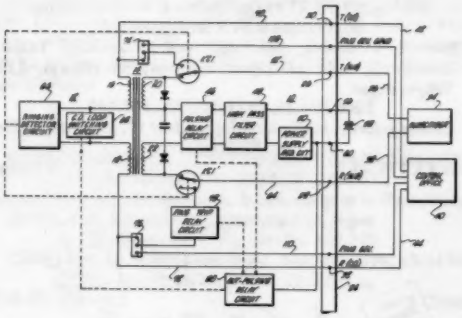
LONG LINE ADAPTER CIRCUIT

Alan R. FitzSimons, Laguna Beach, and Frank P. Mazac, Santa Ana, both of Calif., assignors to San/Bar Electronics Corporation, Long Beach, Calif.

Filed June 1, 1970, Ser. No. 42,190

Int. Cl. H04q *1/36*; H04b *3/36*

U.S. Cl. 179—16 F 12 Claims



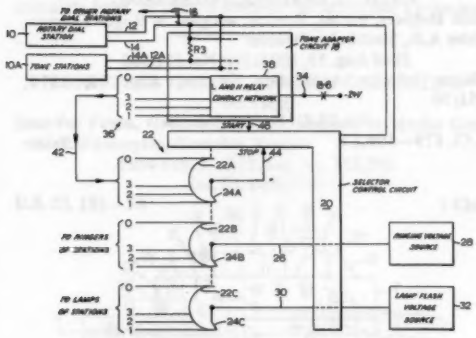
A long line adapter circuit employable with telephone lines used to connect a central office to either normally or abnormally distant subscriber facilities is disclosed. The adapter circuit, which may be physically situated at a central office or at a midplacement point between a central office and a subscriber facility, includes a subscriber loop circuit and a central office loop circuit which are inductively coupled through a line coupling transformer to provide audio coupling between the central office lines and the subscriber lines. The subscriber loop circuit includes a pulsing relay circuit which responds to

a receiver being placed in an off-hook condition and to dial pulses generated by a subscriber. A high pass filter is employed to attenuate battery noise due to voltage surges created by the operation of the pulsing relay circuit. Also included is a regulator circuit for preventing saturation of the transformer and for providing current limiting when the adapter circuit is used for short subscriber's lines. The central office loop circuit includes a ringing detector circuit for sensing AC ringing signals transmitted from a central office and a switching circuit which is controlled by an out-pulsing relay circuit. The switching circuit serves to complete or close the central office loop circuit on both outgoing and incoming calls, and to discontinue the application of ringing signals to a subscriber facility on incoming calls.

3,739,100
DIAL AND MULTIFREQUENCY TELEPHONE SYSTEM EMPLOYING RINGING AND LAMP FLASH SIGNALLING

Delmar G. Cartwright, Pte. Claire, Quebec, Canada, assignor to Bell Canada, Montreal, Quebec, Canada

Filed Mar. 29, 1971, Ser. No. 128,691
Int. Cl. H04m *3/04*
U.S. Cl. 179—18 AD **7 Claims**



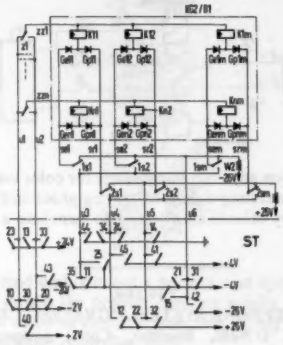
An intercom telephone system having a selector and selector control circuit to receive dial pulse digits. Ringing and lamp flash signals are applied to a called station through two levels of the selector. When some of the stations are tone (multifrequency) stations, a tone adapter circuit receives the tone digits, and causes the selector to step to a position corresponding to the digit received. As in the case of dial pulse digits, ringing and lamp flash are then applied to the called station through the levels of the selector.

3,739,101
CROSS FIELD SYSTEM WITH BISTABLE POLARIZED RELAYS

Peter Gerke, Grafelfing; Helmuth-Joachim Bock, Munchen, and Anton Sennefelder, Gliching, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Jan. 12, 1971, Ser. No. 105,795
Claims priority, application Germany, Jan. 13, 1970, P 20 01 353.0
Int. Cl. H04q *3/48*
U.S. Cl. 179—18 GE **5 Claims**

A switching arrangement for telephone exchange installations having coupling multiples of the cross-field type constructed using coupling contacts of bistable polarized coupling relays, particularly, holding relays, is described. The coupling relays are selectively engageable and returnable. Each relay has a coil end connected directly to markable row input leads and the other coil end connected over two oppositely poled diodes with a column engagement lead. Each such column lead is individually markable and has an equivalent column return lead. When a coupling relay is marked for engagement or return, a marking voltage source is connected to a row input lead, and the marking voltage source is connected to a

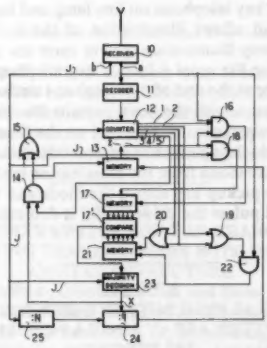


column engagement lead or a column return lead and to ground. A first blocking potential equal to or of opposite polarity relative to the functional voltage at the marked column engagement lead is connected to the unmarked column return or engagement leads. At the unmarked column engagement or return leads, a second blocking potential is applied, which is equal to or of opposite polarity to the potential at the marked row input lead. Additionally, the unmarked row input leads are connected to a third blocking potential which is equal to or in opposite polarity to the potential at the marked column engagement or column return lead.

3,739,102
TRANSMITTER RECEIVER FOR RADIO TELEPHONE NETWORK

Didier Leonard, Boulogne, France, assignor to Compagnie Industrielle Des Telecommunications Cit-Alcatel, Paris, France

Filed May 28, 1971, Ser. No. 148,078
Int. Cl. H04q *7/04*
U.S. Cl. 179—41 A **9 Claims**

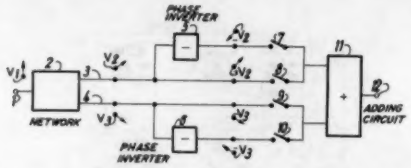


Device ensuring the selection of a fixed connection extension located so as to provide a good quality connection exclusive of other fixed extensions which are not so favorably located. The intended application is the connection between a mobile extension and a fixed extension supplied by the said connection extension.

3,739,103
SYSTEM FOR THE ADJUSTMENT OF THE PHASE POSITION OF AN ALTERNATING VOLTAGE

Heinz Hess, Weiterstadt, Germany, assignor to Fernseh GmbH, Darmstadt, Germany

Filed July 13, 1970, Ser. No. 54,242
Claims priority, application Germany, July 12, 1969, P 19 35 445.1
Int. Cl. H04l 7/08; H03b 3/04
U.S. Cl. 178—69.5 CB **6 Claims**

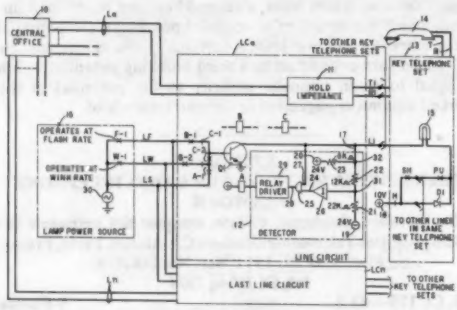


Phase-position adjuster, particularly for color television studio use, for generating signals of varying phase shifts and combining them by selective switching to generate a phase-corrected signal.

3,739,104
KEY TELEPHONE SYSTEM SIGNALING CIRCUIT

John Francis O'Neill, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Aug. 18, 1971, Ser. No. 172,824
Int. Cl. H04m 1/00
U.S. Cl. 179—81 C **10 Claims**



A combined key telephone set line lamp and line pickup key signaling circuit allows illumination of the line lamp while enabling the lamp illumination lead to carry the control information found on the usual A lead of key telephone sets. In the telephone set or at the end of the telephone station cable a single diode in series with the lamp permits illumination of the iine lamp by pulsed ground potential on the illumination lead but normally blocks a source of dc potential connected to the lamp through the diode from the illumination lead. The operation of the line pickup key shunts the diode and between successive ground pulses the dc potential is detected on the illumination lead.

3,739,105
SUPPLEMENTAL PUSH BUTTON INDEX FOR USE WITH PUSH BUTTON ARRAY AS ON A PUSH BUTTON TELEPHONE

Arthur H. Anson, 3301 Congress St., Allentown, Pa.

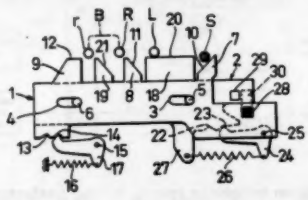
Filed Feb. 28, 1972, Ser. No. 229,758
Int. Cl. H04n 1/26
U.S. Cl. 179—90 K **1 Claim**

An apertured frame is provided which is adapted to fit over a push button array, each aperture of the frame having a tab slidably mounted therein and bearing a legend which may correspond to the legend on the push button associated therewith. Each tab fits over its respective push button and may be secured thereto by means of a pressure sensitive adhesive applied to the underside of the tab. The tabs of the array are larger than the push buttons and are progressively offset in two dimensions with respect to the push button array, thereby to provide a tab array having larger dimensions thatn the push button array.

3,739,106
ARRANGEMENT AT MAGNET TAPE CARTRIDGE USING SEPARATE JACKS TO FORCE CORRECT SEQUENCE OF WRITING, READING, AND ERASING

Willem Huijsers, Farsta, Sweden, assignor to Hugin Kassaregister A.B., Stockholm, Sweden

Filed Aug. 13, 1971, Ser. No. 171,582
Claims priority, application Sweden, Aug. 13, 1970, 11051/70
Int. Cl. G11b 15/04, 23/04
U.S. Cl. 179—100.2 Z **7 Claims**



Computer processing often includes the insertion of a magnet tape cartridge into a jack to bring about the desired operation, i.e., writing, reading or erasing. The jacks are provided with actuating pins of different relative location to penetrate into an end recess in the cartridge and thereby to release the operation. According to the invention, the cartridge has at its insertion end two parallel slides mounted movably and provided with alternatingly inclined and plane guide edges and, respectively, stop edges for the actuating pins of the jacks to eliminate entirely the insertion of the cartridge into a wrong jack and thereby the risk of destroying valuable information. The cartridge in other words, is processed in a forced correct sequence writing, reading and erasing.

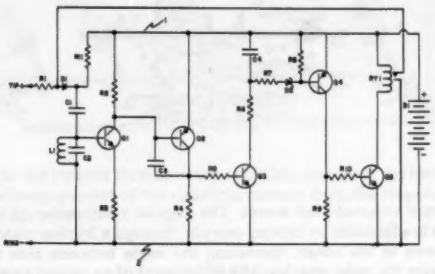
3,739,107
ON PREMISE TELEPHONE LOOP TESTER

Lucian W. Spencer, Dallas, Tex., assignor to Superior Continental Corporation, Hickory, N.C.

Filed Oct. 13, 1970, Ser. No. 80,380
Int. Cl. H04b 3/46
U.S. Cl. 179—175.3 **20 Claims**

The instant invention relates to a device that permits a telephone line (loop) to be tested from a telephone central of-

fice, thereby eliminating the expense resulting from a visit by a repairman to a subscriber's premises. The disclosed device is responsive to an aduio tone of a predetermined frequency, is located on a subscriber's premises and is activated by an audio tone of frequency within the pass band of the telephone circuit, this tone being transmitted from a central office. A tuned detector, located within the device, upon receiving said

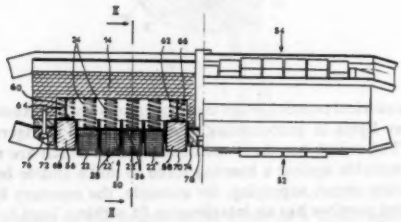


predetermined tone, actuates a timing circuit and relay circuit that places a circuit across the tip and ring of a telephone line. The circuit simulates the electrical condition of a telephone instrument in the "off hook" position and causes central office line equipment to operate, if the telephone loop is in an operable state, thereby indicating that the telephone loop is complete from the central office to the subscriber's premises.

3,739,108
HIGH SPEED VEHICLE CURRENT COLLECTING DEVICE

Jean-Pol Payen, Grenoble, France, assignor to Merlin Gerin, Societe Anonyme, Grenoble, France

Filed Feb. 3, 1971, Ser. No. 112,291
Int. Cl. B60l *5/08*
U.S. Cl. 191—58 **1 Claim**



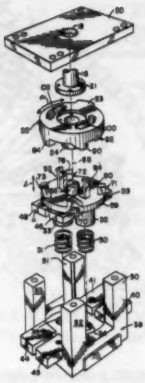
Electric current collecting device for feeding of a high speed vehicle which comprises a movable shuttle, or current collecting head, mechanically guided by feed rails and contact shoes biased against these rails. Movable and stationary guide shoes are secured to the shuttle to reinforce the guide action by excessive off-centering of the shuttle, the guide shoes being in normal operating positions spaced from the feed rails.

3,739,109
SAFETY DISCONNECT SWITCH

Hans Ege, Des Plaines, Ill., assignor to Underwriters Safety Devices Co., Chicago, Ill.

Filed May 19, 1972, Ser. No. 255,093
Int. Cl. H01h *19/58*
U.S. Cl. 200—4 **10 Claims**

A safety override disconnect switch particularly adapted for emergency use in the main electrical power supply of heavy equipment. The switch features an operator controlled axially fixed rotor having cam means for axially driving an axially movable contact-carrying element to close the switch, and heavy biasing means for strongly biasing the contacts away from the circuit connectors.

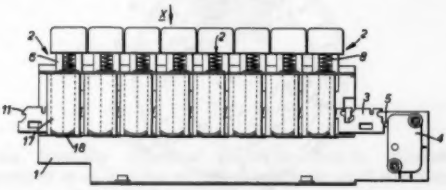


In a preferred embodiment a backup cam system becomes operational should the contact-carrying axially movable element remain stuck to circuit connectors during reverse rotation of the operator controlled rotor.

3,739,110
MULTIPLE SWITCH CONTROL ASSEMBLY WITH MULTIPLE PUSHBUTTON INTERLOCK LATCH BAR AND SAFETY SWITCH

Philip James Constable, Uxbridge, England, assignor to Drayton Controls Limited, West Drayton, Middlesex, England

Filed Dec. 15, 1971, Ser. No. 208,208
Claims priority, application Great Britain, Dec. 22, 1970, 60826/70
Int. Cl. H01h *9/26*
U.S. Cl. 200—5 R **8 Claims**



A multiple push button assembly with abutment members on each pushbutton are securely held in undercut portions of a single latch bar in the respective pushbutton switch operative positions. More than one pushbutton assembly may be simultaneously actuated and interlocked in the operative position.

3,739,111
TRANSFER SWITCH FOR TAP-CHANGING REGULATING TRANSFORMERS WITH IMPROVED CONTACT STRUCTURE

Georg Wittenzellner, Oberhinkhofen, and Hans Stark, Regensburg, both of Germany, assignors to Maschinenfabrik Reinhausen Gebruder Scheubeck K.G., Regensburg, Germany

Filed Jan. 25, 1972, Ser. No. 220,668
Claims priority, application Germany, Feb. 2, 1971, P 21 04 766.5
Int. Cl. H01h *21/78, 1/22*
U.S. Cl. 200—11 TC **5 Claims**

A transfer switch structure for tap-changing regulating transformers includes a cylindrical contact support for fixed

contacts, cooperating movable contacts arranged inside the support and a liquid containing tank for housing said contact support. The tank is provided with terminals. A novel contact

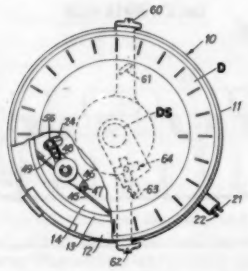
structure including spring-biased superimposed contact fingers forming an X-like pattern is provided for transferring current from the movable current-carrying contacts to the terminals of the transfer switch.

3,739,112

ELECTRICAL TIMER SWITCH ASSEMBLY WITH IMPROVED SWITCH OPERATOR MEANS FOR AUTOMATIC AND MANUAL TRIPPING

Claude V. Koch, Two Rivers, Wis., assignor to AMF Incorporated, White Plains, N.Y.

Filed Nov. 22, 1971, Ser. No. 200,768
Int. Cl. H01b *43/18*; G04c *23/50*
U.S. Cl. 200—38 F **6 Claims**



A time switch having a receptacle in its case in which one of the receptacle contacts provides the fixed contact of the switch means and the switch actuating means is disassociated from the trip means to prevent automatic operation of said time switch.

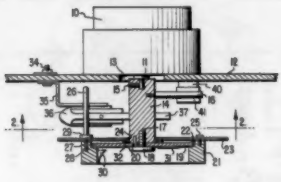
3,739,113

REVERSIBLE PROGRAMMER FOR ELECTRIC CIRCUITS

Bjorn J. Gruenwald, Easton, Pa., assignor to Alpha Press Electronics, Inc., Alpha, N.J.

Filed June 22, 1971, Ser. No. 155,581
Int. Cl. H01h *43/10, 21/28*
U.S. Cl. 200—38 R **2 Claims**

A device for providing repetitive pulses having adjustable width and spacing including a drive motor, a cam pin rotatable with the output shaft of the drive motor and a second cam pin carried with the first pin but angularly manually adjustable relative thereto. A switch mounted adjacent the paths of travel of the pins causes the motor to periodically reverse as the pins sequentially operate the switch back and forth. One or more other switches are operated by one or both of the cam pins to



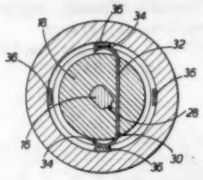
control external load means. The angular relationship of the pins is adjustable by moving one pin, through a friction clutch, relative to the other. Increasing the angle between pins increases the pulse spacing, and adjustment of an output switch position alters the pulse duration.

3,739,114

SECURITY DEVICES

Leonard Palman, 5 Windsor Close, Hendon Lane, London N.3, England

Filed Dec. 29, 1971, Ser. No. 213,705
Int. Cl. H01b *27/00*
U.S. Cl. 200—44 **2 Claims**



An electrical switch for use in connection with, for example, courtesy lights in automobiles, truck lights and refrigerator lights. The switch has three members, two of which are relatively movable against a biassing force to make and/or break an electric circuit supplying, for example, the courtesy light. The third member has an interference fit within a bore in one of the other two members and forms an adjustable extension thereof constituting an abutment whereby the switch is operable. When fitting the switch to a door, the third member is fitted loosely in the bore so that when the door is closed for the first time, the rod is forced through the bore to a position wherein the door is closed and the switch is operated. The interference fit retains the rod in this position.

3,739,115

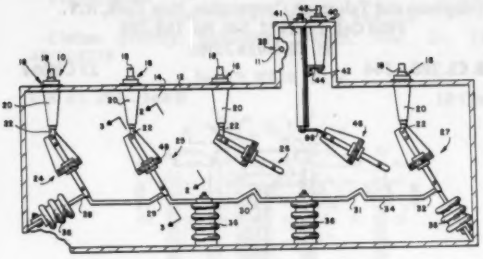
SWITCHING APPARATUS

James E. McClain, and Byron G. Darnell, both of Greenville, Tex., assignors to Esco Manufacturing Company, Greenville, Tex.

Filed June 17, 1971, Ser. No. 153,981
Int. Cl. H01h *31/00*
U.S. Cl. 200—48 R **5 Claims**

Disclosed is switch apparatus having a plurality of rotatably mounted contacts having resiliently supported extensions selectively coupling a plurality of fixed contacts to another set of corresponding fixed contacts on a bus bar, the fixed bus bar

contacts being part of a continuous cross-section rod and having adjacent portions respectively tangential and perpendicular to the arcuate motion of the rotatable contact at the instant of disengagement of the rotatable contact from the respective bus bar contact.

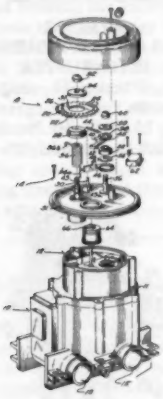


3,739,116

WATER SOFTENER REGENERATION CONTROL

John F. Horvath, Milwaukee, Wis., assignor to Aqua-Chem, Inc., Milwaukee, Wis.

Filed Sept. 15, 1971, Ser. No. 180,747
Int. Cl. G01d *13/26*
U.S. Cl. 200—56 R **15 Claims**



Initiation of the regeneration cycle of a water softener is achieved on the basis of the volume of water processed by the softener. Flow volume is measured and when a preselected amount of flow has occurred, a control is actuated to initiate the regeneration cycle. The mechanism for translating the measured flow is reset to the prescribed starting point after the regeneration cycle has been initiated and is adjustable to provide control at any one of a number of different flow gallonages.

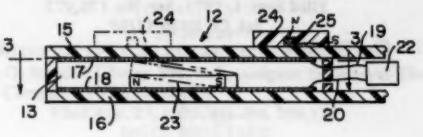
3,739,117

MAGNETIC SWITCH FOR GAME BOARDS WITH MOVABLE MAGNET CONTACT

Robert A. Melton, 320 N. Johnson, Macomb, Ill.

Filed Mar. 8, 1972, Ser. No. 232,797
Int. Cl. H01h *3/16, 36/02*
U.S. Cl. 200—61.1 **12 Claims**

The magnetic switch comprises a plastic enclosure located beneath the playing surface of a game board. A sheet or strip of copper foil is secured to the underside of the top wall of the enclosure and a second sheet or strip is secured to the upper surface of the bottom wall. These sheets are connected into a signal circuit by leads. A bar magnet rests on the lower conductive sheet. A playing piece has a magnet embedded in it. When the playing piece is moved over the proper pole of the bar magnet, one end will be elevated into contact with the upper conductive sheet, thus closing the electric signal circuit. A paramagnetic cup may be substituted for the bar magnet, or a steel ball may be substituted for the playing piece.

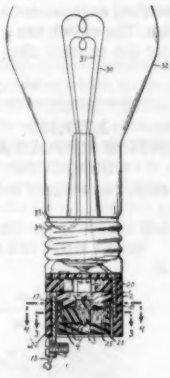


3,739,118

INERTIALLY OPERABLE ELECTRICITY SWITCHES

Wallace A. Bounds, 3726 135th Avenue S.E., King County, Wash.

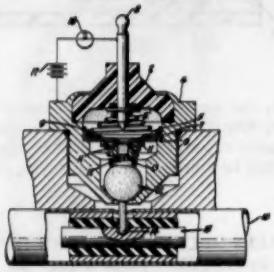
Filed June 14, 1971, Ser. No. 152,716
Int. Cl. H01h *35/14*
U.S. Cl. 200—61.45 R **48 Claims**



An inertially operable electricity switch, otherwise described as an impulse switch, of relatively small size. Combinations of the small impulse switch and socket adapter, movable room lamps and long life light bulbs. The switch is operated by a small relatively sharp movement of that electrical device in which it may be assembled, such as in a table lamp and its socket when the table lamp is gently and momentarily accelerated in its upper part where the switch is contained within the socket. The lamp remains in place with socket and switch in the same single general attitude but sways momentarily. New components of the switch which enable it to function as it does are a small unstable mass linked to switch contacts and release and stabilizing means for releasing and holding contacts in the proper position. Movement of the unstable mass with respect to the remainder of the switch are particularly its structure or mounting interchanges switch contacts, while the release and stabilizing means holds them in their new positions when acceleration is stopped.

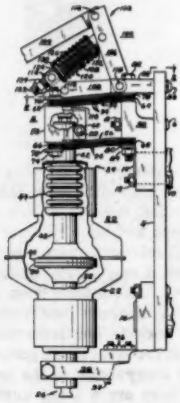
The separate combinations of the switch with each of a light bulb socket, socket adapter, and light bulb itself are operated also by gentle and momentary acceleration. The new switch with its combinations are primarily intended to enable easier and more convenient lighting operations than are now afforded by similar devices in popular use.

3,739,119
PISTON ACTUATED PRESSURE RESPONSIVE SWITCH WITH RECENTER CONTACT ADJUSTMENT MEANS
Richard C. Rike, Dayton, Ohio, assignor to General Electric Corporation, Detroit, Mich.
Filed Sept. 1, 1971, Ser. No. 176,972
Int. Cl. H01h *35/38*
U.S. Cl. 200—82 D 1 Claim



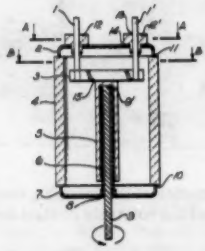
A pressure responsive switch for indicating the loss of pressure in a vehicle brake line with the switch being actuated by piston movement through a swivel or toggle arrangement including a contact ring which is engaged by a contact to complete a circuit when hydraulic pressure occurs. The contact remains in electrical engagement after the toggle returns to its center position. The switch has a stem which is pressed inwardly to recenter the contact after the brake system has been repaired.

3,739,120
FLEXIBLE SWITCH SUPPORT AND TERMINAL CONNECTOR
Robert V. Starr, Amity, Pa., assignor to McGraw-Edison Company, Elgin, Ill.
Filed July 15, 1971, Ser. No. 162,923
Int. Cl. H01h *166 J*
U.S. Cl. 200—144 B 5 Claims



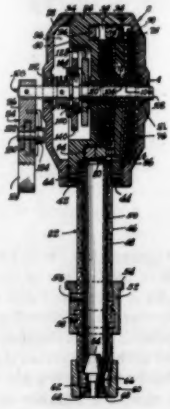
A movable electrically conductive connector for a switch is disclosed which comprises a support structure having a pair of spaced apart straps each comprising a plurality of thin, flexible, conductive laminated plates. The straps have a superimposed position with the corresponding ends of each of the straps being clamped to a fixed terminal and the opposite ends of the straps each being clamped to the movable stem of a movable switch contact. The straps are movable with the contact stem in a substantially straight line perpendicular to the horizontal planes of the straps over a small travel distance of the contact stem.

3,739,121
TORQUE TUBE VACUUM SWITCH
Floyd D. Miles, Saratoga, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Oct. 12, 1971, Ser. No. 188,385
Int. Cl. H01h *33/66*
U.S. Cl. 200—144 13 Claims



A vacuum switch employing a torque tube extending into the evacuated enclosure. A control rod extends within the open external torque tube end and engages the internal end so that an externally applied torque on the rod torsionally deflects the internal end of the torque tube. Rotatable switch elements within the enclosure are activated by this motion. Bridging (double-gap) embodiments and various switching format versions are shown.

3,739,122
HIGH VOLTAGE ARC EXTINGUISHING CIRCUIT INTERRUPTER
Chester E. Pierzchala, Wheaton, Ill., assignor to Reliable Electric Company, Franklin Park, Ill.
Filed July 19, 1971, Ser. No. 163,581
Int. Cl. H01h *33/12*
U.S. Cl. 200—146 R 13 Claims



A load interrupter unit of the arc expulsion type has a dielectric body with a fixed contact on the body and a dielectric rotor rotatable in the body and carrying a movable contact. A snap-acting or timing mechanism is used to rotate the rotor in one direction for effecting a quick-break of the contacts, and the same mechanism is used to rotate the rotor in the same direction to effect a quick-make of the contacts. The circular contact path renders the unit relatively compact. The gases produced by the arc pass between the separating contacts and quench the arc, and the gases pass to the outside of the unit through an expulsion vent. A dielectric wall of the body isolates and protects parts of the mechanism from the chamber in which the arc is formed.

3,739,123

CIRCUIT BREAKER

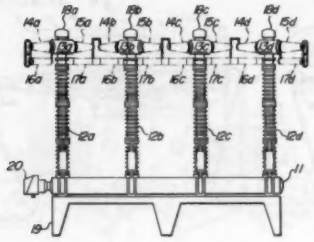
Zenichi Nakano, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 16, 1971, Ser. No. 199,194

Claims priority, application Japan, Nov. 24, 1970, 45/102778

Int. Cl. H01h *33/54*

U.S. Cl. 200—148 R 10 Claims



A circuit breaker wherein a pair of valves having different diameters are connected with each other through an actuating rod so as to constitute first differential valve means, a valve seat having a diameter smaller than that of the smaller-diameter valve is provided in the larger-diameter valve in such a manner as to be able to be brought into and out of contact with the larger-diameter valve, second differential valve means is established between the smaller-diameter valve and the effective minimum diameter given by the contact of the valve seat with the larger-diameter valve so that pressure medium always acts on these two valves, the aforementioned two differential valve arrangements are reversed through the engagement and disengagement of the valve seat and by controlling the pressure of the medium acting on the larger-diameter valve by means of a controller, whereby the aforementioned actuating rod is biased either in the closing direction or breaking direction, and thus the breaking portion connected with the actuating rod is operated.

3,739,124

BLAST-PISTON CIRCUIT BREAKER

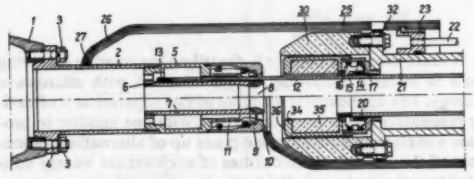
Frederich Richter, and Heinz-Helmut Schramm, both of Berlin, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 10, 1972, Ser. No. 242,380

Claims priority, application Germany, Apr. 30, 1971, P 21 22 183.0

Int. Cl. H01h *33/70*

U.S. Cl. 200—148 A 4 Claims



The circuit breaker is provided with a stationary contact, made hollow for the removal of switching gases, and a movable contact pin which is movable with the blast cylinder relative to the stationary piston. The length of the contact pin is such that the contact pin separates from the contact only when the free volume of the blast cylinder is reduced to one-half. The end of the blast cylinder slides on a tube surrounding the contact which tube has a bent end face spaced in opposition to a metal part enclosed by the stationary piston to define a planar spark gap, the diameter of which is twice as large as that of the movable contact pin.

3,739,125

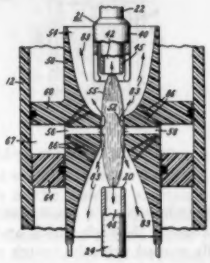
PUFFER-TYPE GAS-BLAST CIRCUIT BREAKER

Heinz O. Noeske, Cherry Hill, N.J., assignor to General Electric Company, Philadelphia, Pa.

Filed Apr. 27, 1972, Ser. No. 248,123

Int. Cl. H01h *33/70*

U.S. Cl. 200—148 A 11 Claims



A puffer-type gas-blast circuit breaker comprises a pair of separable electrodes between which an arc is established and a nozzle having a throat of insulating material through which the arc extends. A plurality of injection passages extend radially of the nozzle into the throat region and intersect the throat at their inner ends. Pump means operates in response to circuit-breaker opening to inject arc-extinguishing gas through the injection passages into the throat, and this gas is forced to flow axially of the arc in opposite directions from the throat toward the spaced electrodes.

3,739,126

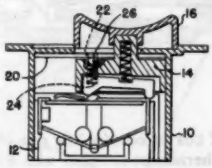
SWITCH ASSEMBLY

Edward V. Sahrbacker, Brecksville, and Julius P. Wied, Boston Heights, both of Ohio, assignors to Lucerne Products, Inc., Northfield, Ohio

Filed June 1, 1971, Ser. No. 148,512

Int. Cl. H01h *15/02, 3/50, 9/06*

U.S. Cl. 200—157 1 Claim

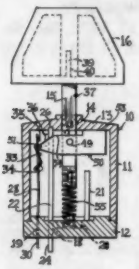


A slide button tool handle electric switch having a reciprocable slide button for actuating the switch. The switch includes means for detachably retaining the slide button in at least one of its reciprocable positions. The switch also includes guide means for guiding and limiting the reciprocable travel of the slide button.

3,739,127
KEYBOARD PULSE SWITCH

Eric L. Long, and Walter L. Cherry, both of Waukegan, Ill., assignors to Cherry Electrical Products Corporation, Waukegan, Ill.

Filed Feb. 17, 1972, Ser. No. 227,058
Int. Cl. H01h 13/50, 1/50
U.S. Cl. 200—160 7 Claims

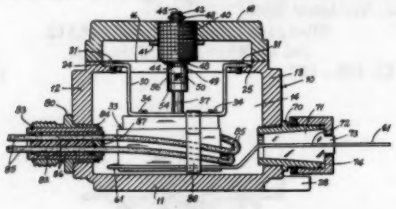


An electric switch having a momentary pulse-like action embodied in a housing through which an actuator is adapted to be reciprocally moved, with the switch associated with a so-called keyboard assembly utilized in electronic equipment such as computers, data processing machines, and electric typewriters. A trip member is mounted on the actuator with limited pivotal movement relative thereto. A spring contact is stressed by the trip member, and when released springs into momentary contact with a stationary contact with a stationary terminal. The spring contact may be coated with lead, tin, or other dense material to absorb and restrain bounce of the contact.

3,739,128
FLAME PROOF THERMOSTAT BOX

Glenda F. Kaesser, St. Louis, and Marshall G. Zavertnik, Manchester, both of Mo., assignors to Killark Electric Manufacturing Company, St. Louis, Mo.

Filed Sept. 30, 1971, Ser. No. 185,319
Int. Cl. H01h 21/08
U.S. Cl. 200—168 G 13 Claims

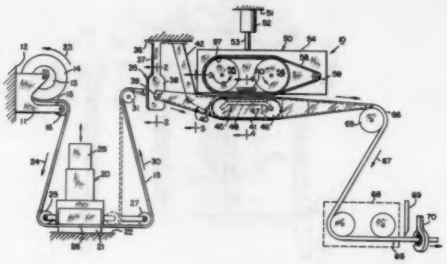


A flame proof box to contain any one of several commercially available thermostat switches with a readily removable strap support for the switch; readily removable flame-proof means to conduct the wires and the capillary tube of the thermostat through the walls of the box; and a flame-proof means through the removable cover of the box for adjustment of the thermostat, that has a lost motion, positive-connection, clutch device that enables the cover to be secured in place and the clutch elements to be interengaged without pre-alignment of the clutch elements.

3,739,129
TUBE WELDING APPARATUS AND METHOD

Norman K. Miller, Concordville, Pa., assignor to Miller Brothers, Concordville, Pa.

Filed Nov. 26, 1971, Ser. No. 202,322
Int. Cl. H05b 9/04
U.S. Cl. 219—10.53 9 Claims

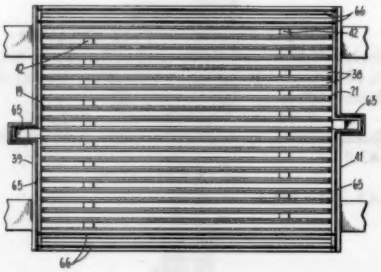


Apparatus and method wherein a web of material to be welded is longitudinally fed and simultaneously constrained to a transversely concave configuration, encompassing an arbor or support in the concave relation with web margins overlapping, and welding means welding the overlapping margins in cooperation with the supporting arbor.

3,739,130
MULTI-CAVITY MICROWAVE APPLICATOR

Jerome R. White, Saratoga, Calif., assignor to Guardian Packaging Corporation, Newark, Calif.

Filed May 25, 1972, Ser. No. 256,645
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 12 Claims



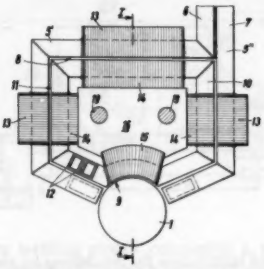
A multi-cavity applicator is described for treating a moving web of material uniformly across its width with microwave energy. The applicator is made up of two separate sets of cavity resonators which are intermeshed with one another to provide a material treatment zone made up of alternating resonators of the two sets. The cavities of each set are energy coupled together and are individually dimensioned to support one of the classes of modes consisting of $TE^{\square}_{1,0,n}$; $TM^{\square}_{1,1,n}$; $TE^{\circ}_{1,1,n}$ and $TM^{\circ}_{0,1,n}$ where n represents an integral number. Moreover, the resonators of each set in the treatment region are so positioned relative to the resonators of the other set that the points of highest electrical intensity in adjacent ones of such resonators are in space quadrature, i.e., the points of highest electrical intensity in the adjacent resonators are 90° spacially out of phase.

3,739,131

APPARATUS FOR INDUCTIVELY SURFACE-HARDENING WORKPIECES OF AT LEAST APPROXIMATELY AXIALLY SYMMETRICAL SHAPE

Friedhelm Reinke, Remscheid, Germany, assignor to AEG-Elotherm G.m.b.H., Remscheid-Hasten, Germany

Filed July 17, 1972, Ser. No. 272,636
Claims priority, application Germany, Sept. 23, 1971, P 21 47 518.3
Int. Cl. H05b 5/02
U.S. Cl. 219—10.79 10 Claims



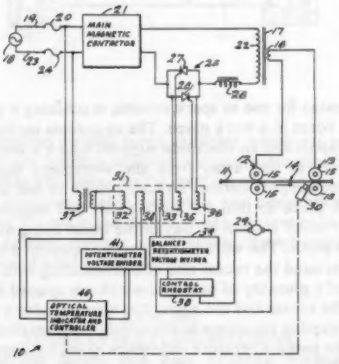
An apparatus for inductively surface hardening a workpiece having two heating conductors extending on each side of the workpiece parallel to the workpiece axis and a cross conductor at one end of the workpiece completing the conductor loop. According to the invention of this application, a further conductor is provided about the workpiece with surfaces extending parallel to and slightly separated from inner surfaces of the cross conductor ground part of the circumference and around the workpiece for the rest of the circumference so that current flow is induced in the further conductor. The further conductor is preferably mounted for axial movement so that the distance between a stop holding one end of the workpiece and the further conductor remains the same.

3,739,132

POWER CONTROL CIRCUIT FOR RESISTANCE HEATING MOVING CONDUCTORS

Edgar A. Ellinghausen, and George B. Johnson, both of Crystal Lake, Ill., assignors to Interstate Drop Forge Co., Milwaukee, Wis.

Filed Dec. 1, 1971, Ser. No. 203,581
Int. Cl. H05b 1/02
U.S. Cl. 219—50 3 Claims



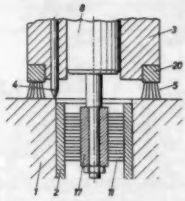
A circuit for regulating the temperature to which a moving conductor such as a wire or rod is heated. The conductor is electrically heated by the Joule effect as it passes between two or more electrical contacts. Current in the conductor is controlled in response to both the temperature and the speed of the conductor.

3,739,133

APPARATUS FOR WELDING TUBES INTO TUBE PLATES

Karl Kadlez, and Adolf Marek, Vienna, both of Austria, assignors to Simmering-Graz-Pauker Aktiengesellschaft fur Maschinen-Kassel-und-Waggonbau, Vienna, Austria

Filed July 13, 1971, Ser. No. 162,046
Claims priority, application Austria, July 14, 1970, 6381; June 9, 1971, 4983
Int. Cl. B23k 9/02
U.S. Cl. 219—60 A 12 Claims



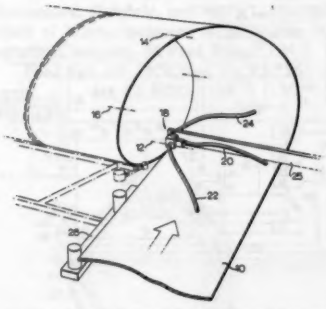
Apparatus for welding tubes to tube plates in an inert gas atmosphere comprises a welding head carrying a gas shield in surrounding relation to the welding electrode to confine the inert gas to the welding zone. The gas shield comprises heat-resisting insulating material to enable close juxtaposition to the electrode so as to confine the welding zone and the material also is flexible in order to maintain contact with the tube plate despite irregularities of the plate surface or the ends of the tubes secured thereto in order to exclude surrounding atmosphere from the welding zone. The welding head may have a slidably supported centering member including a mandrel portion for extending into a tube to center the head and a portion extending axially of the mandrel portion and carrying a similar gas shield of flexible material for engaging the inner surface of the tube after the mandrel has been withdrawn from the tube and during the welding operation.

3,739,134

PROCESS FOR TACK WELDING AND FINISHING SPIRALWELD PIPE

Harry C. Wade, Hamilton, and John W. Witts, Fonthill, Ontario, both of Canada, assignors to The Steel Company of Canada Limited, Hamilton, Ontario, Canada

Filed Dec. 29, 1971, Ser. No. 213,269
Int. Cl. B23k 1/16
U.S. Cl. 219—62 4 Claims

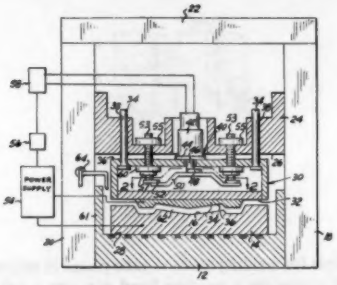


A process is disclosed for producing spiralweld pipe, in which skelp is delivered to a rolling station, rolled, and continuously tack-welded together at the lowermost point in the vertical cross-section of the pipe. The pipe is removed and the tack-weld is converted to a secure seam by submerged-arc welding at another location.

3,739,135
ELECTRO-EROSION MACHINING APPARATUS

Jean Pfau, Collonge-Bellerive, (Geneva), Switzerland, and Hubert Schaidl, Munich, Germany, assignors to Ateliers des Charmilles, S.A., Geneve, Switzerland

Filed Oct. 20, 1971, Ser. No. 190,986
Claims priority, application Switzerland, Oct. 22, 1970, 15681/70
Int. Cl. B23p 1/04, 1/14
U.S. Cl. 219—69 G 7 Claims

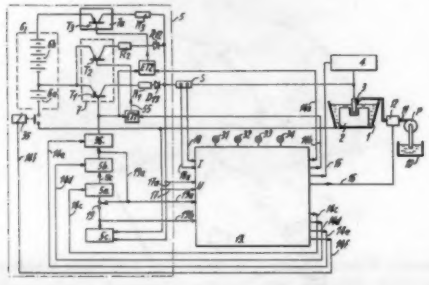


An electro-erosion machining apparatus particularly adapted for electro-eroding workpieces of large dimensions and weight. The apparatus is provided with a frame supporting a pair of parallel platens, one of the platens being adjustably positionable at various positions relatively to the other platen. An intermediary platen, disposed between the two platens mounted on the frame of the apparatus, is supported from one of the platens by appropriate guiding means and is driven relatively thereto by way of a servo mechanism controlled by the servo control adapted to normally maintain a finite spacing between the surface of a workpiece and the working surface of an electrode tool in electro-erosion machining apparatus. The intermediary platen forms part of the workpiece and electrode tool assembly of the apparatus.

3,739,136
PROCESS AND APPARATUS FOR MACHINING BY ELECTRO-EROSION

Georges-Andre Marendaz, Geneva, Switzerland, assignor to Ateliers Des Charmilles S.A., Geneva, Switzerland

Filed Mar. 22, 1972, Ser. No. 236,826
Int. Cl. B23p 1/08, 1/14
U.S. Cl. 219—69 C 10 Claims

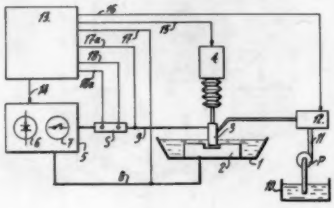


A process and installation for machining by electro-erosion, comprising means for measuring the voltage between the electrode and the part to be machined during a discharge, and a device sensitive to the difference between the voltages corresponding to two distinct discharges, this device acting upon the electrical and/or the mechanical control of the installation.

3,739,137
PROCESS AND APPARATUS FOR MACHINING BY ELECTRO-EROSION

Georges-Andre Marendaz, Geneva, Switzerland, assignor to Ateliers Des Charmilles S.A., Geneva, Switzerland

Filed Mar. 22, 1972, Ser. No. 236,827
Claims priority, application Switzerland, Mar. 25, 1971, 4401/71; Mar. 25, 1971, 4402/71
Int. Cl. B23p 1/08, 1/14
U.S. Cl. 219—69 C 13 Claims

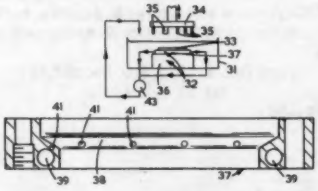


A process and installation for machining by electro-erosion, comprising means for measuring the rate of variation of the voltage of the machining gap during the establishment of each discharge, these means acting upon the electrical and/or the mechanical control of the installation.

3,739,138
SPARK EROSION MACHINING

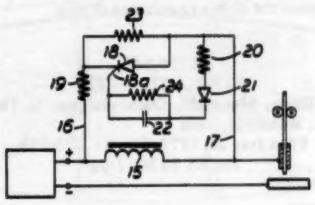
Bernard Arthur Hall, Birmingham, and Stanley Peter Hollins, Streetly, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed June 29, 1972, Ser. No. 267,594
Claims priority, application Canada, Feb. 7, 1971, 31081
Int. Cl. B23p 1/08
U.S. Cl. 219—69 D 5 Claims



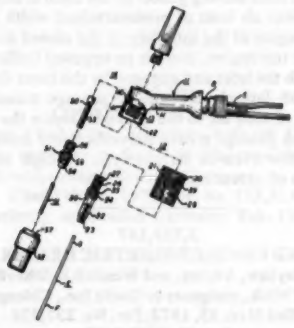
Apparatus for use in spark erosion machining a plurality of through bores in a work piece. The apparatus includes a work piece support and an electrode support which is movable relatively towards and away from the workpiece support. The workpiece support defines a recess which in use is closed by the work piece so that the work piece and support define a chamber which is open by way of the bores being machined in the work piece. The work piece support contains a conduit extending around the recess and communicating with the recess by way of a plurality of passages which are spaced around the wall of the recess and the apparatus also includes a pump and means coupling the pump to the conduit so that during operation of the pump a pressure difference exists between opposite sides of the work piece so that dielectric liquid is caused to flow through the bores which are being machined in the work piece. The apparatus further includes detachable plugs for blocking predetermined passages of said plurality of passages so as to provide different pressure differences between opposite sides of the work piece in selected regions of the work piece.

3,739,139
APPARATUS FOR SHORT CIRCUIT ELECTRIC ARC WELDING
Kiss Bertil Weman, Laxa, Sweden, assignor to Elektriska Svetsningsaktiebolaget, Gothenburg, Sweden
Filed Jan. 5, 1971, Ser. No. 103,983
Claims priority, application Sweden, Jan. 14, 1970, 387/70
Int. Cl. B23k 9/10
U.S. Cl. 219—131 R 5 Claims



A D.C. arc welding circuit containing a series inductor shunted by a branch containing a half-wave rectifier and a resistor. The rectifier is poled so as to block the current produced in said shunt branch by the voltage induced in the inductor on rise of the magnetic flux in the inductor.

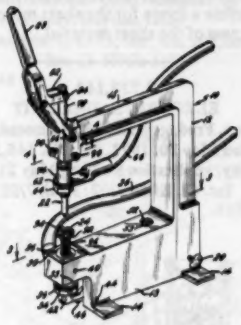
3,739,140
COMBINATION WELDING TORCH
James V. Rotillo, 329 Hackensack Street, Carlstadt, N.J.
Filed Sept. 20, 1971, Ser. No. 181,741
Int. Cl. B23k 9/28
U.S. Cl. 219—144 1 Claim



A combination welding torch. Adapter means are provided for electric arc welding utilizing a consumable electrode interchangeable with elements for inert gas shielded arc welding utilizing a non-consumable electrode, and connection means are provided for use in the welding torch apparatus, to thereby provide a unitary welding torch usable interchangeably for performance of welding operations.

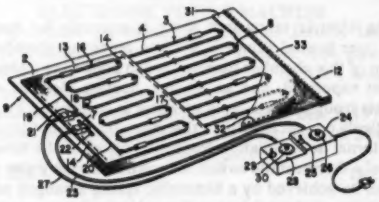
3,739,141
FUSED EYELETTING MACHINE
William Jordan Siegel, 814 East Franklin Avenue, Silver Spring, Md.
Continuation of Ser. No. 756,133, Aug. 29, 1968, abandoned.
This application July 26, 1971, Ser. No. 166,303
Int. Cl. H05b 1/00
U.S. Cl. 219—150 V 11 Claims

This invention relates to a fused eyeletting machine of high flexibility and accuracy. A pair of manually moved opposed tools (22,24), electrically isolated from the machine frame structure carry out eyelet upsetting and fusing operations.



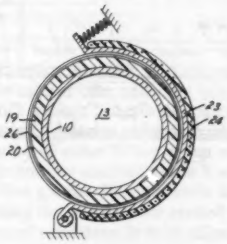
Means are provided to adjust the upsetting pressure; centering and leveling accessory is provided to position a workpiece between the tools.

3,739,142
ELECTRIC BLANKET HAVING AUXILIARY HEATING ELEMENT
John M. Johns, 120 Drysdale Drive, Los Gatos, Calif.
Filed Feb. 1, 1972, Ser. No. 222,574
Int. Cl. H05b 1/00
U.S. Cl. 219—212 4 Claims



Presented is an electric blanket construction in which the conventional heating element adapted to transmit heat over the major area of the blanket is augmented by an auxiliary heating element which is superimposed over a portion of the conventional heating element to increase the transmission of heat from a selected portion of the blanket.

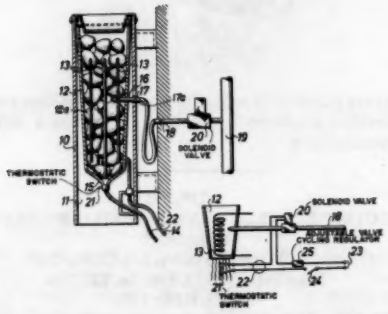
3,739,143
HEAT DEVELOPER APPARATUS
Arlon J. Amundson, Oakdale, and Gary L. Hovind, Cottage Grove, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Nov. 30, 1970, Ser. No. 93,726
Int. Cl. H05b 1/00
U.S. Cl. 219—216 1 Claim



A heat developer for developing light sensitive heat developable sheet material without imparting pressure to the

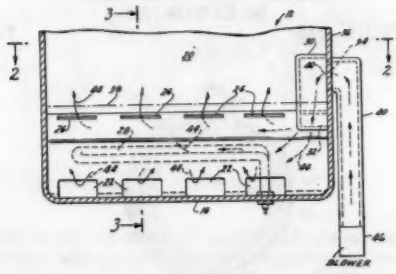
sensitive coating while the sheet material is being heated. The developer includes a rotating cylinder and an electrically heated metal plate partially covering the cylinder and spaced therefrom to define a space for the sheet material corresponding to the thickness of the sheet material.

3,739,144
ELECTRIC SAUNA UNIT
Sven-Olaf Janson, Fredagsgrand 13, Halmstad, Sweden
Filed May 20, 1971, Ser. No. 145,309
Claims priority, application Sweden, May 21, 1970, 6992/70
Int. Cl. H05b *3/02*; F24h *7/02*
U.S. Cl. 219—362 **2 Claims**



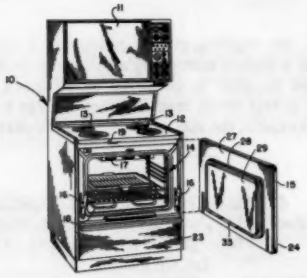
In an electric sauna unit there is a nozzle for sprinkling water over heated stones in a stone receiving chamber. The bottom of this chamber forms a trough collecting water which has not vaporized, and an electric heating element extends into this trough. The supply of water is controlled by a valve operatively connected with a thermostatic element exposed to the external heat radiation from the bottom of the trough. Instead of a thermostatic switch for controlling the water supply, this can be achieved by a bimetallic spring arranged adjacent the bottom of the cabinet and mechanically connected to a control valve. In the water conduit may be disposed a manually disposed throttle valve. The water control valve may be a solenoid valve which is periodically opened and closed.

3,739,145
DISHWASHER WATER-AIR HEATER
Harold L. Woehler, Herrin, Ill., assignor to Fedders Corporation, Edison, N.J.
Filed Nov. 8, 1971, Ser. No. 196,695
Int. Cl. H05b *1/00*; B08b *3/10*
U.S. Cl. 219—370 **7 Claims**



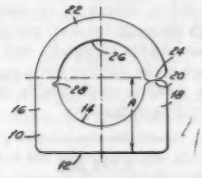
An electrical heating element is mounted to the bottom of a dishwasher tank and a cover is positioned over said heating element to define a heating chamber. The cover has ports formed on both a top surface and on a side surface, said ports communicating the heating chamber with the wash chamber of the dishwasher. An air duct connects the heating chamber to an external blower and passes through the wall of the dishwasher tank at a level above the maximum water level of the dishwasher. When heating water, the water circulates through the heating chamber by convection to insure an even water temperature. When air is being heated, the external blower circulates room temperature air through the heating chamber where it comes in contact with the heating element prior to passing through the ports into the wash chamber where it circulates between the dishes to enhance drying.

3,739,146
PYROLYTIC OVEN
John W. Gilliom, Mansfield, Ohio, assignor to The Tappan Company, Mansfield, Ohio
Filed July 20, 1972, Ser. No. 273,593
Int. Cl. F27d *11/02*
U.S. Cl. 219—393 **4 Claims**



The normal door sealing gasket of the oven is incomplete to form an ambient air inlet of predetermined width at the bottom central region of the interface of the closed door and the oven liner. At this region, there is an opposed baffle of greater length beneath the inlet and engaged by the inner door liner to form therewith lateral ambient air passage means for flow therethrough of such air to the inlet and hence the interior of the oven. Such passage means prevents flame from being expelled from the oven in its pyrolytic or high temperature cleaning cycle of operation.

3,739,147
EXTRUDED CONTACT ELECTRIC HEATER STRIP
William K. Mayhew, Adrian, and Wendell E. Disbrow, Tecumseh, both of Mich., assignors to Gould Inc., Chicago, Ill.
Filed Mar. 23, 1972, Ser. No. 237,324
Int. Cl. H05b *3/58*
U.S. Cl. 219—535 **3 Claims**



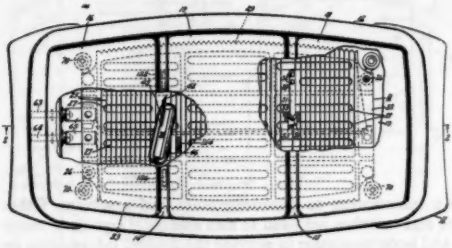
A thermally conductive casing and a method for forming the same for a contact heater resistance element in the form of an open extrusion of thermally conductive, soft metal which, in open form, will receive an elongate resistance element and which is then closed to confine the element and shaped into a configuration which draws the contacting edges of the extrusion into tight engagement to seal in the heating element.

3,739,148

FOOD WARMING DISH

William D. Ryckman, Jr., Asheboro, N.C., assignor to General Electric Company, Bridgeport, Conn.

Filed Jan. 28, 1972, Ser. No. 221,532
Int. Cl. F27d *11/02*
U.S. Cl. 219—441 6 Claims



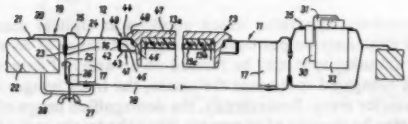
A food warming dish that employs an electrical resistance heating element for heating a heat retentive material inside the dish. Energization of the heating element is regulated by a semiconductor control device having two terminals in electrical circuit with the heating element and a control gate that permits electrical current to flow between the two terminals only after a signal has been applied to the control gate. The semiconductor control device is arranged in an electrical circuit such that a temperature responsive switch in series relationship between the heating element and semiconductor control device prevents a signal from being sent to the control gate when the temperature reaches a set predetermind temperature.

3,739,149

COOKING APPLIANCES

Karl Fischer, and Felix Schreder, both of Oberderingen, Germany, assignors to E. G. O. Elektro-Gerate Blanc U. Fischer Kommanditgesellschaft, Germany

Filed Feb. 16, 1971, Ser. No. 115,324
Claims priority, application Germany, Feb. 17, 1970, P 20 07 145.8
Int. Cl. H05b *3/68*
U.S. Cl. 219—445 31 Claims



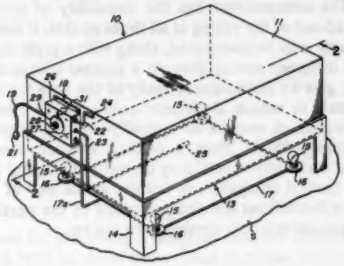
An electric cooking appliance comprises one or several hotplates fitted in respective openings in a top plate. A ring encircles each hot-plate with a peripheral flange of the hot-plate resting on said ring. The outer edge of the ring and the inner edge of the opening in the top plate have downwardly directed continuous flanges which are sealed to one another and fixed to one another. A frame by which the appliance can be mounted on a base has an opening provided with a downwardly directed flange in which the two plate is fitted with an outer downwardly directed flange on the top plate adjoining and secured to the frame flange.

3,739,150

SURFACE PLATE AND CONTROLS THEREFOR

Rudolph J. Rahn, Dayton, Ohio, assignor to Rahn Granite Surface Plate Company, Dayton, Ohio

Filed Jan. 5, 1971, Ser. No. 104,004
Int. Cl. H05b *1/02*
U.S. Cl. 217—448 9 Claims



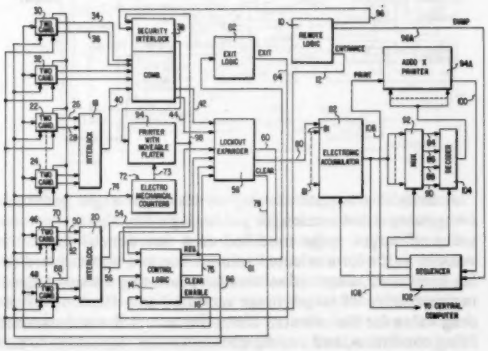
A granite surface plate which is provided at its undersurface with a controlled source of heat. Temperature sensors are used as controls to apply and vary the heat in a manner to maintain the upper surface of the plate flat, irrespective of a changing temperature gradient to which the surface plate may be subjected.

3,739,151

ELECTRONIC VOTING MACHINE

Michael Terrance Moldovan, Jr., Charles Jerome Lindros, both of Lakewood, Robert Dean Wescott, and Lawrence Levi Anderson, both of Jamestown, all of N.Y., assignors to AVM Corporation, Jamestown, N.Y.

Continuation-in-part of Ser. No. 204,506, Dec. 3, 1971, abandoned. This application Apr. 17, 1972, Ser. No. 244,609
Int. Cl. G07c *13/00*
U.S. Cl. 235—54 F 18 Claims



An electronic voting machine is disclosed which accommodates for selection of one, and only one, candidate from each of two office groups. Electronic logic circuitry is used throughout. The logic features redundant interlocks to assure (1) that overvoting in either office group cannot occur and (2) that a vote cannot be counted unless a selection has been made in both office groups. The interlocks feature redundancy while minimizing the components needed to accommodate for large numbers of candidates in both office groups, and also a combined cancelafter vote reset arrangement which both prevents overvoting and causes reset after vote completion. Another feature of the system is the use of parallel tallying devices each capable of printing out its tally, one such device

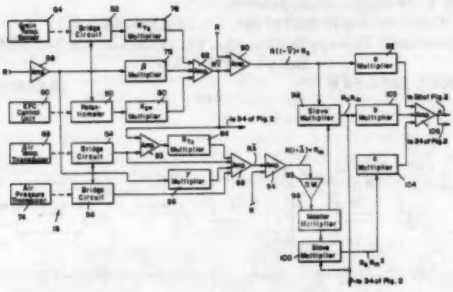
being the electromechanical counters usually associated with a voting machine and which tally the votes for the individual candidates, and the other such device being an electronic accumulator which likewise counts or tallies the votes for the individual candidates. At the end of a voting day, a print-out of the electromechanical tally and the accumulator tally is made. The accumulator tally print-out is made sequentially much in the fashion of an adding machine, while the print-out of the electromechanical counters is made in one pass of a movable platen. The accumulator has the capability of providing a digital read-out of the voting at all times so that, if desired, the accumulator may be connected, along with a great number of others at different voting sites, to a central computor which may then give an instantaneous tally of the vote for an entire district, state or nation. Both print-outs produce a tally sheet having type which may be be optically scanned to produce a digital output which, from a central location receiving a number of such tally sheets, may forward this digital information to a central computer, as before, at the end of a voting day. Other flexibilities are also presented by the parallel electromechanicalelectronic accumulator system.

3,739,152

BALLISTIC ELEVATION ANGLE GENERATOR

Millard M. Frohock, Jr., and William E. McAdam, Jr., both of Thousand Oaks, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 26, 1971, Ser. No. 202,339
Int. Cl. G06g 7/26, 7/80
U.S. Cl. 235—61.5 E 21 Claims



A ballistic computer having an elevation angle generator comprising a first section for producing a first signal representative of target range modified as a function of the initial velocity value for a selected ammunition and nonstandard firing conditions, a second section for producing a second signal representative of target range modified as a function of the drag value for the selected ammunition and the nonstandard firing conditions, and a computation section responsive to said first and second signals for forming a power series approximation of the ballistic elevation angle signal.

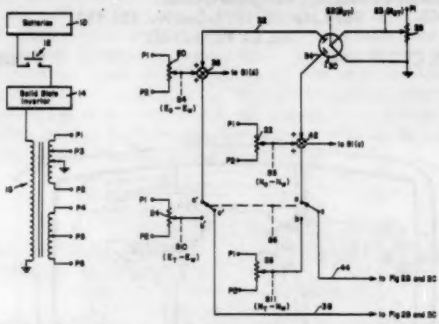
3,739,153

WEAPON FIRING COMPUTER

Leonard Kendy, Palos Verdes Peninsula, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 12, 1971, Ser. No. 171,055
Int. Cl. G06g 7/80
U.S. Cl. 235—61.5 R 9 Claims

The present invention is a fire control computer which computes weapon firing data from known information set into the computer by handset controls in a predetermined sequence of operations. The fire control computer is analog in nature and uses handset knobs and switches coupled to dials to input



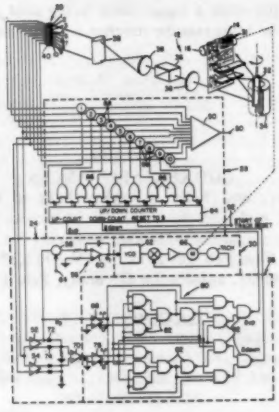
known information to potentiometers and resolvers. Other knobs and switches are used to null electrical signals to resolvers and potentiometers to provide the desired information on dials which may be read by the operator.

3,739,154

OPTICAL TRACKING APPARATUS FOR READ-OUT OF HIGH-DENSITY RECORDING

John W. Corcoran, Los Altos, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed May 1, 1972, Ser. No. 249,202
Int. Cl. G06r 7/015
U.S. Cl. 235—61.11 E 8 Claims

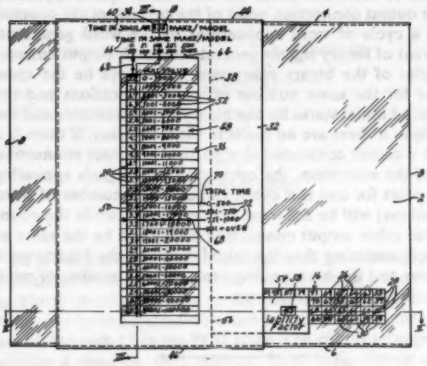


In read-out apparatus which employs an optical scanner with a stationary output beam, a magnified image of an elongated scanning spot may be formed on an array of detectors. As the elongated spot scans the tracks, the track images scan the detector array. Equivalently, the demagnified image of the array may be thought of as moving along the tracks in the scan plane. Skew or flutter causes the track (of plurality of tracks) to move along the detector array, whereby detecting the sequence of change in the orientation between the track and the detectors determines the relative direction of motion of the track. An electronic logic circuit is coupled to the detectors, and generates tracking error signals of magnitudes and polarities which are indicative of the tracking error caused by flutter. The tracking error signals are delivered to the tape transport to provide track position correction. Skew error is compensated via linear gate devices, which switch the detectors to continuously pass the signal of the one track being read to the output, regardless of which detector or pairs of detectors, is temporarily aligned with that track.

3,739,155
AIRCRAFT INSURANCE CALCULATOR

Fermin M. O'Larte, 301 West 114 Street, Kansas City, Mo.

Filed Mar. 23, 1972, Ser. No. 237,461
Int. Cl. G05d 23/00
U.S. Cl. 235—89 6 Claims

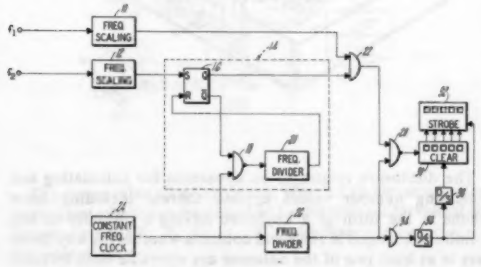


An aircraft insurance calculator consisting of a base card having insurance rates printed thereon in horizontal rows graduated as to pilot experience and in vertical columns graduated as to value of the aircraft, a slide card movably overlying the base card and having a slot formed therein for viewing any one of said vertical columns selectively by horizontal movement of the slide card, and having an aircraft value scale imprinted thereon adjacent the slot, the slide card also being vertically movable relative to the base card according to another factor of pilot experience, and a special holder for the cards.

3,739,156
FREQUENCY MULTIPLIER

Edward F. Gebelein, Jr., Harwinton, and Michael H. Dawes, New Hartford, both of Conn., assignors to Chandler Evans Inc., West Hartford, Conn.

Filed July 21, 1971, Ser. No. 164,785
Int. Cl. G01r 23/02
U.S. Cl. 235—150.3 11 Claims

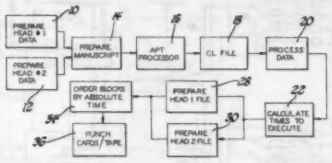


Apparatus for producing an output signal, in digital form, which is commensurate with the product of two input signals with frequencies proportional to the information contained therein. Packets of pulses at a first frequency, the first frequency being commensurate with the first input signal, are loaded into an output counter with the number of packets per unit of time being commensurate with the second input frequency.

3,739,157
METHOD FOR PREPARING PROGRAM MEDIUM FOR MULTIPLE CONTROLLED ELEMENT MACHINE

Vincent F. Bobrowicz, Livonia, and John E. Stevenson, Dearborn Heights, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Sept. 30, 1970, Ser. No. 76,934
Int. Cl. G06f 15/46
U.S. Cl. 235—151.11 6 Claims

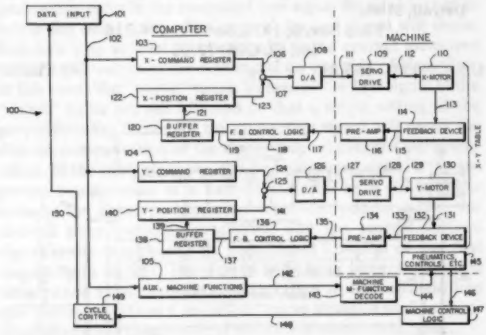


A method for preparing a program tape for simultaneously controlling both heads of a two-head machine, the head path segments being placed on the tape in order of absolute time at completion.

3,739,158
SERVO SYSTEM WITH DIRECT COMPUTER CONTROL

Morton P. Woodward, deceased, late of Vestal, N.Y. (by Elinor D. Woodward, executrix) assignor to Universal Instruments Corporation, Binghamton, N.Y.

Filed Dec. 29, 1970, Ser. No. 102,355
Int. Cl. G06f 15/46
U.S. Cl. 235—151.11 7 Claims



A closed loop servo control system using a digital position error control means which feeds a digital to analog converted desired velocity as one input to an analog control means where said analog desired velocity is combined with the analog motor torque and motor velocity inputs to control a motor. The digital position error control means calculates the deviation from the desired position and looks up a corresponding desired velocity in a position error versus desired velocity table stored in its memory.

3,739,159
GAS FLOW CALCULATION SYSTEM

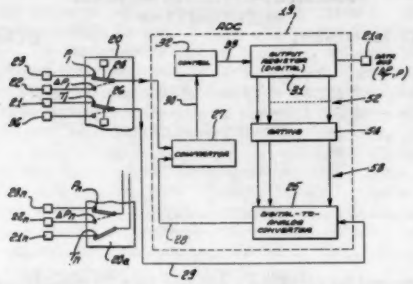
Robert E. Nalley, Anaheim, Calif., assignor to Hydrill Company, Los Angeles, Calif.

Filed Dec. 27, 1971, Ser. No. 212,279
Int. Cl. G06j 1/00; G06f 3/05, 15/32
U.S. Cl. 235—151.34 11 Claims

Gas flow calculation equipment to compute the quantity $\Delta P \cdot P/T$ in digital form includes:

a. an ADC processing unit operable to receive analog signals P, ΔP and T and to provide digital outputs $\Delta P/T$ and P,

b. a first shift register connected to receive said digital output $\Delta P/T$ and into which said digitized $\Delta P/T$ is shiftable,
c. a second shift register connected to receive said digital output P and into which digitized P is shiftable,
d. multiplier means connected to receive and multiply the

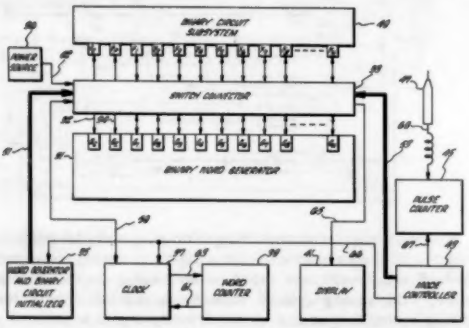


contents of said shift registers, thereby producing a corresponding digital product, and
e. a third shift register connected to receive the digital product of the multiplier means. Additional circuitry is operable to derive, from the contents of the third register, the square root of the quantity $\Delta P \cdot P/T$.

3,739,160
METHOD AND APPARATUS FOR FAULT-TESTING BINARY CIRCUIT SUBSYSTEMS

Hasan Afif El-Hasan, and Roger Erwin Packard, both of Santa Barbara, Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Nov. 8, 1971, Ser. No. 196,316
Int. Cl. G06f *11/00*
U.S. Cl. 235—153 AC **40 Claims**

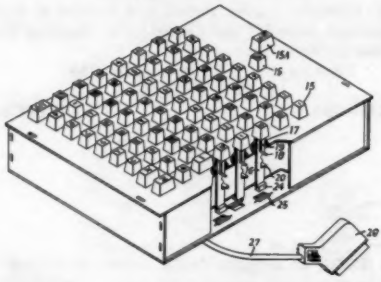


A subsystem of binary circuits, packaged in modular form and having a plurality of connection points through which it is incorporated into a master system such as a digital computer, is tested by utilizing a binary word generator that periodically generates a string of parallel binary bits for application to the subsystem under test. Output signals from the subsystem under test are continually monitored and supplied to the binary word generator to shape the character of the succeeding string of parallel binary bits (binary word) applied to the subsystem. If there are no faults in the subsystem under test, starting the word generator and the digital circuits in the subsystem from respective initial reference states, insures that the binary word applied to the subsystem by the word generator, after a certain number of word applications or periods, will always be the same, for the same initial states and number of periods. A different binary word, than the one expected for a subsystem having no faults, is generated at the end of a test cycle when an identically structured subsystem having a fault or faults therein is tested under the same initial conditions and number of periods. To isolate the fault-containing portion of a subsystem when the expected word is not generated, the output connection points of the subsystem are disconnected from the input connection points of the binary word generator, the binary circuit subsystem and word generator are placed into an initial or reference state, and the binary signals appearing at each output connection point of the subsystem are counted during a cycle of word applications by the word generator. The count of binary signals generated at each output connection point of the binary subsystem will always be the same number for the same number of word applications and the same set of initial states for the binary word generator and the subsystem, if there are no faults in the subsystem. If there is a fault in a circuit connected to a particular output connection point of the subsystem, the count of binary signals appearing at this point for one test cycle, (a particular number of word applications) will be different than expected, while the count at all the other output connection points will be the same as expected, assuming that the initial states of the binary word generator and the binary subsystem, and the number of word applications remained the same.

3,739,161
CASH REGISTERS AND OTHER ACCOUNTING MACHINES

Henry Gross, and Samuel Gross, both of London, England, assignor to Gross Cash Registers Limited, London, England

Filed Dec. 10, 1970, Ser. No. 96,829
Claims priority, application Great Britain, Dec. 22, 1969, 62,227/69
Int. Cl. G06f *7/38*; G06c *7/06*
U.S. Cl. 235—156 **15 Claims**

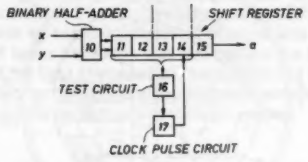


The disclosure relates to an apparatus for calculating and indicating number values applied thereto including input means in the form of a keyboard having a plurality of key members arranged in rows and columns wherein the key members in at least two of the columns are operable both to enter values into the apparatus and to cause the apparatus to perform simultaneously one operative cycle of calculation and indication of result, one of these columns corresponding to a series of whole numbers while the other corresponds to the same numbers plus a fraction or a higher order number; indicator means including indicator element, and means for actuating one of the indicator elements similarly for operation of corresponding keys in said two columns; the apparatus including at least one further column of numbers for entering higher values without effecting cycling.

3,739,162
SERIAL BCD ADDER WITH RADIX CORRECTION

Hubertus Bettin, Braunschweig, Germany, assignor to Olympia Werke AG, Wilhelmshaven, Germany

Filed July 14, 1971, Ser. No. 162,503
Claims priority, application Germany, July 16, 1970, P 20 35 225.4
Int. Cl. G06f 7/50
U.S. Cl. 235—170 13 Claims

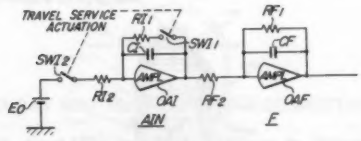


An MOS transistor circuit arrangement for the calculating mechanism of an electronic computer for adding and subtracting binary numbers under consideration of so called illegal characters (pseudotetrades) which consist of the binary numbers 10 through 15 in the BCD code. The circuit arrangement includes a dynamic shift register, input logic circuit means connected to the first stage of the shift register for adding a pair of binary input signals; test circuit means responsive to the value stored in the shift register for detecting an illegal character and producing an output signal; a clock pulse circuit means responsive to the output of the test circuit means for producing a correction value output signal; and circuit means included in selected stages of the shift register and coupled to the output of the clock pulse circuit for adding the correction value to the value stored in the shift register.

3,739,163
MEASUREMENT OF MEAN WAITING TIME

Kotaro Hirasawa; Koichi Kawatake, both of Hitachi; Takeo Yuminaka, and Tatsuo Iwasaka, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 11, 1971, Ser. No. 105,221
Claims priority, application Japan, Jan. 16, 1970, 45/3857
Int. Cl. G06g 7/18; G06f 7/38
U.S. Cl. 235—183 21 Claims



The mean value of waiting time, Wm, for an elevator system on a certain floor can be obtained by detecting intervals of the elevator arrival $T_1, T_2, T_3, \ldots, T_i$ at the floor and carrying out the operation:

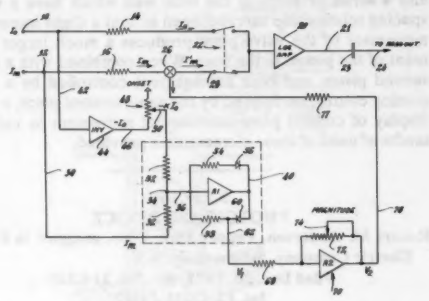
$$Wm = (\tfrac{1}{2})\,(T_1^2 + T_2^2 + T_3^2 + \ldots T_i^2)/(T_1 + T_2 + T_3 + \ldots T_i)$$

An analog integrator AIN begins integration of a constant voltage as each elevator signals his arrival and resets at the next elevator arrival so as to provide an output of a sawtooth waveform. A filter F flattens this sawtooth output to supply a quantity proportional to the mean waiting time. In a digital embodiment, counters are employed to perform the summing operations.

3,739,164
DEVICE FOR COMPENSATING A DERIVED SIGNAL

Walter Bohler, Norwalk, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed June 21, 1971, Ser. No. 154,724
Int. Cl. G06g 7/24, 7/26
U.S. Cl. 235—197 8 Claims

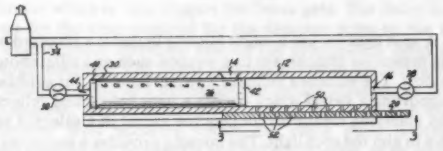


A second derived signal is compensated over a particular range for undesired deviation caused by an error signal component in a first measured signal, from which the second signal is derived. A correction signal is algebraically added to the first signal at values on one side of an "onset" value (corresponding to the beginning of the particular range of the second derived signal). Where the error signal component is of constant value (causing a relative percentage error inversely proportional to the amplitude of the first signal), the correction signal will be proportional to the amount that the first signal is less than the "onset" value; this will cause a constant percentage error in the corrected first signal for all values at or below the onset value. The second derived signal will therefore now vary at least proportionally to the correct measured value for all values of the first signal on one side of (less than, in this case) the "onset" value. Values of the first signal at the "onset" value are not affected so that a single setting of the proportionality factor for the correction signal will cause the desired compensation of the derived signal over the particular range. In the exemplary use, the first measured signal is the apparent transmission of a sample material in a photometric system, the constant (positive) error component is the undesired stray radiation measured, and the second derived signal is the absorbance (a logarithmic function of the first transmission signal). The device will cause the compensated absorbance versus sample concentration to be a straight line and therefore acts as a so-called "curve straightener" in spectrophotometers (especially of the atomic absorption type).

3,739,165
FLUID PRESSURE OPERATED DIGITAL DISPLAY

Robert L. Esken, Clayton, Ohio, assignor to The Bendix Corporation, Southfield, Mich.

Filed Jan. 27, 1972, Ser. No. 221,365
Int. Cl. G06d 1/02
U.S. Cl. 235—201 FS 10 Claims



A digital display device is disclosed for displaying increments of mechanical movement, which includes a movable

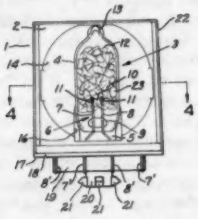
piston member having an ordered series of numerals inscribed thereon along its longitudinable axis and disposed in a bore having a window adapted to register with individual numerals on the piston. The piston position in the bore is controlled by venting or fluid pressure on one end thereof which is normally applied to both the ends with this venting in turn controlled by registry between a series of ports on a movable control plate and a series of ports in the bore wall which have a vernier spacing relationship therebetween so that a slight incremental movement of the valve plate produces a much larger movement of the piston in the bore. When combined with a similar second piston and bore arrangement controlled by a simple porting control performed by the same control plate, a digital display of control plate incremental movement in units and tenths of units of these increments is provided.

3,739,166

PHOTOFLASH DEVICE

Robert M. Anderson, Pepper Pike, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,246
Int. Cl. G03b *15/02*
U.S. Cl. 240—1.3 4 Claims



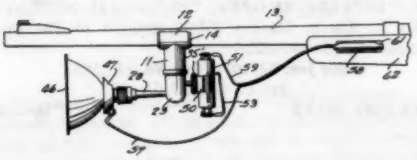
A photoflash device with a photoflash lamp mounted within a reflector, the lamp being mountable in the reflector only in one or the other of two 180° apart axially oriented positions, has only one moisture indicator spot so located on the inside wall of its transparent envelope as to be viewable from in front of the reflector either directly or by reflection off the reflector irrespective of which one of the axially oriented positions the lamp is mounted in within the reflector.

3,739,167

LIGHT FOR HUNTING WEAPON

Glen H. Avery, 1247 Blodgett Avenue, Fort Worth, Tex.

Filed Apr. 8, 1970, Ser. No. 26,551
Int. Cl. F21v *33/00*
U.S. Cl. 240—2 3 Claims



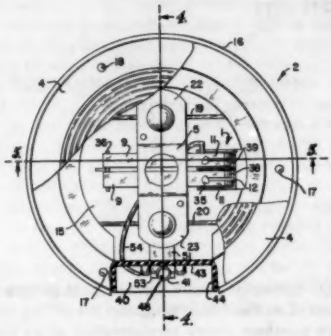
A spot light for use in night hunting includes a standard having means for attachment to a weapon such as a rifle, shotgun or bow. The standard includes a swivel housing, for adjustably supporting a swivel which carries a light holder and reflector, and clamping means for locking the swivel in a selected position to aim the spot light. The housing provides a mounting for a battery, and a remote switch connected to the unit through appropriate conductor wires is mounted on the weapon in position to be conveniently actuated by the hunter at the appropriate time.

3,739,168

VEHICLE LAMP AND TERMINAL THEREFOR

Kenneth C. Ploeger, Blue Springs, Mo., assignor to Rupert Manufacturing Company, Inc., Blue Springs, Mo.

Filed May 8, 1972, Ser. No. 250,876
Int. Cl. B60g *1/00*
U.S. Cl. 240—7.1 R 9 Claims



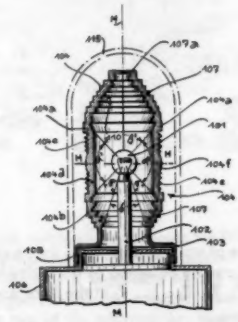
A vehicle lamp for automobiles, trailers, trucks, and the like includes a housing having an open end compartment closed by a lens and a lamp support within the compartment for receiving a lamp having a lamp base with at least one lamp contact thereon and engageable with a portion of a terminal mounted on an insulating member and having a resilient finger portion of the terminal engageable with a bare end portion of an insulated conductor in a manner to cause flexing of the finger portion and clamping of the conductor by pressing the bare end portion of the conductor against the insulating member to prevent withdrawal therefrom.

3,739,169

PANORAMIC LIGHT EMITTER FOR WARNING LIGHTS

Wilhelm Weinreich, 354 Friederichstrasse 30, Kurbach, Germany

Filed Aug. 30, 1971, Ser. No. 175,977
Claims priority, application Germany, Sept. 1, 1970, P 20 43 253.5; Dec. 23, 1970, P 20 63 481.5
Int. Cl. F21l *15/02*
U.S. Cl. 240—22 5 Claims



The panoramic light emitter includes a cylindrically shaped converging lens positioned around a central light source. The lens directs the rays of light passing therethrough in a horizontal direction generally perpendicular to the vertical axis of the emitter. Concave reflectors having a configuration in section of segments of a parabola are positioned above and below the cylindrical lens. The light rays strike the reflectors and reflect horizontally parallel to the light rays reflected by the lens so

that substantially all of the light from the light source is either deflected by the lens horizontally or reflected by the reflectors horizontally to provide a panoramic source of light for 360 degrees around the vertical axis of the emitter. Another embodiment has a transparent generally cylindrical member positioned over the light source with the axis of the cylindrical member coaxial with the vertical axis of the emitter. The cylindrical member has upper and lower portions positioned above and below the light source that deflect the vertically projected rays of light emanating from the light source to a horizontal direction generally perpendicular to the vertical axis of the emitter. The intermediate portion of the cylindrical member has an annular cylindrical concave lens and annular upper and lower deflectors that also project the intermediate portion of the light generated by the light source in a horizontal direction to thus provide a panoramic source of light for 360° around the vertical axis of the light emitter.

3,739,170

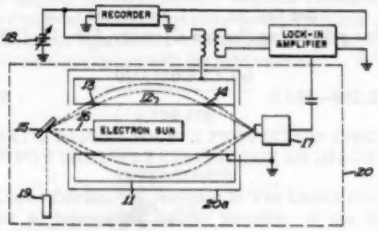
AUGER ELECTRON SPECTROSCOPY

Gerald K. Bohn, Hopkins, and Roland E. Weber, Minneapolis, both of Minn., assignors to Physical Electronics Industries, Inc., Edina, Minn.

Continuation of Ser. No. 68,983, Sept. 2, 1970, abandoned. This application Dec. 20, 1971, Ser. No. 210,092

Int. Cl. H01J *37/26*

U.S. Cl. 250—49.5 AE 17 Claims



An apparatus is disclosed having special utility for performing analyses utilizing the Auger effect. A coaxial cylindrical electron analyzer is combined with a coaxial electron gun between the apertures in the inner tube of the analyzer. A structure for a cylindrical analyzer having an electrical field free of fringing between cylinders is also disclosed, as is a simplified off-axis exit aperture.

3,739,171

GAMMA RAY SPECTROSCOPY WITH QUANTITATIVE ANALYSIS

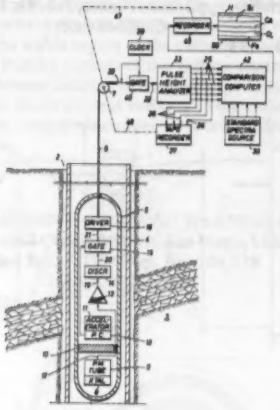
Hubert D. Scott, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed July 19, 1971, Ser. No. 163,982

Int. Cl. G01t *1/16*

U.S. Cl. 250—83.3 R 20 Claims

An illustrative embodiment of the invention includes methods and apparatus for obtaining gamma ray spectra of earth formations surrounding an open or cased well borehole. Pulsed neutrons of 14 MEV are used to excite the elements around the well bore and a scintillation detector is activated a predetermined time after each pulse from the source to detect gamma rays resulting from the capture in the earth formation of thermalized neutrons from the source. The spectrum of gamma rays so resulting is obtained and compared with a composite spectrum made up of a weighted mixture of standard spectra by the use of the least squares technique. The gain and threshold values of the standard spectra are adjusted and the composite spectra resulting therefrom are again compared with the unknown spectrum and this process repeated until the best possible fit of the standard composite spectrum is obtained. The weights of the standards so obtained are then logged as a function of borehole depth to provide lithology information.



3,739,172

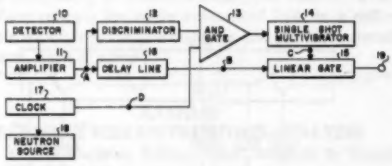
CIRCUIT FOR IMPROVING DATA IN PULSE DETECTION SYSTEMS

Richard B. Culver, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed May 24, 1971, Ser. No. 146,261

Int. Cl. G01t *1/16*

U.S. Cl. 250—83.3 R 14 Claims

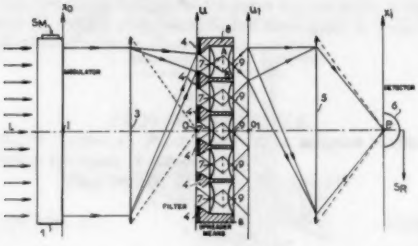


The amplified pulses from a radioactivity detector are coupled through a delay line to a linear gate. The amplified pulses from the detector are also connected to a discriminator. The output of the discriminator is AND gated in a logical gate with a clock pulse which is synchronized with a high energy neutron source. The AND gate triggers a single shot multivibrator which in turn triggers the linear gate. The delay line allows for the time required for the detector pulse to rise to the discriminator threshold and for the propagation delay in the logic circuitry. The linear gate opens before the arrival of the detector pulse and closes after it passes through. In this embodiment, any detector pulse having the necessary discriminator level occuring within the clock pulse interval passes through the linear gate as a full width pulse. In an alternative embodiment, a J-K flip-flop circuit is triggered by the trailing edge of the single shot multivibrator to disable the AND gate, thus causing the linear gate to pass only the first detected pulse having the necessary discriminator level.

3,739,173
INTERLACED MULTIPLEXING ELECTRO-OPTICAL SYSTEM

Georges Broussaud, Paris 16eme, France, assignor to Thomson-CSF, Paris, France

Filed Feb. 5, 1971, Ser. No. 112,893
Claims priority, application France, Feb. 18, 1970, 7005787
Int. Cl. H04b 9/00
U.S. Cl. 250—199 7 Claims

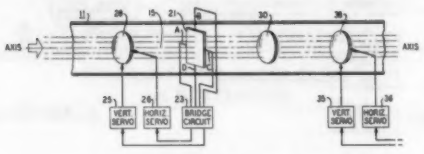


A double diffraction optical system associated with a monochromatic light source, with optical-electrical modulating means and with photoelectric detector means, for effecting the interlaced spectral demultiplexing of a plurality of multiplexed electrical signals.

3,739,174
INTEGRATING ELECTROMAGNETIC BEAM POSITION SENSOR

Detlef Christoph Gloge, Red Bank, N.J., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed Jan. 4, 1971, Ser. No. 103,754
Int. Cl. G01j 1/20
U.S. Cl. 250—201 R 4 Claims



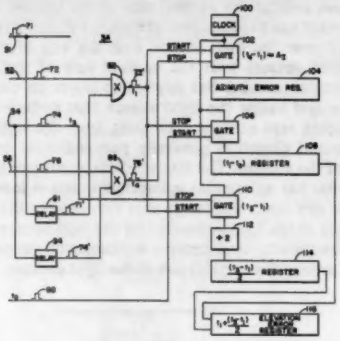
Quadrant-type spatially-integrating beam position sensors are disclosed that extend across a transverse section of an optical waveguide. These sensors intercept a fraction of the optical beam energy therein either along two orthogonal lines through the optical beam or throughout a cross section of the beam.

3,739,175
PHOTO SENSITIVE STAR SENSING ARRAY

Crawford D. Mabee, Largo, and Alvin M. Turner, Clearwater, both of Fla., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Jan. 6, 1971, Ser. No. 104,358
Int. Cl. G01j 1/20
U.S. Cl. 250—203 R 1 Claim

A photosensitive detector for mounting in the focal plane of a star tracking telescope of the gradient detecting type. The detector includes two sets of long, thin photocells set at an angle to each other so that azimuth information as well as

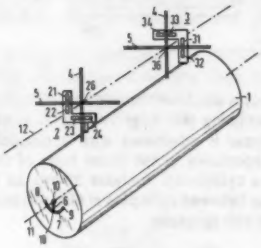


elevation information can be obtained with a single sweep in elevation as the image of a predetermined star traces a path across the photocells.

3,739,176
ARRANGEMENT FOR THE CONTROLLED GUIDANCE OF A WORKING MACHINE WITH LASER BEAMS

Juergen Thorn, Haar, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Feb. 22, 1971, Ser. No. 117,326
Claims priority, application Germany, Feb. 27, 1970, P 20 09 360.1
Int. Cl. G01j 1/20
U.S. Cl. 250—203 R 9 Claims

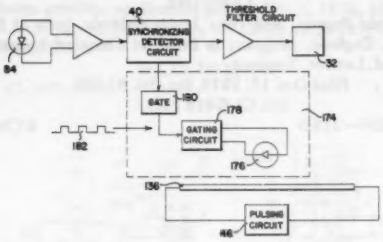


An apparatus which moves may be simply and accurately controlled to travel generally parallel with a laser beam where the apparatus has connected therewith or mounted thereon a control means including a first and second sensing means which detect any relative movement from a predetermined relationship with the laser beam. Advantageously the control means includes at least first and second sensing means positioned in spaced relation along the laser beam with each producing a separate indication of deviation from the laser beam. In addition a third sensing means may be provided on the apparatus at a point remote from the laser beam to measure rotary movement of said apparatus. It is an important feature of the invention that the laser beam have distinctly measurable horizontal and vertical components and may take the form of a cross. In such case each of the first and second sensing means will include a pair of photoelectric sensors preferably located on opposite sides of each of a horizontal and vertical component of the laser beam at the point of the sensing means.

3,739,177
LIGHT SENSITIVE CONTROL

Wen H. Ko, Cleveland, Ohio, assignor to North American Manufacturing Company, Cleveland, Ohio

Filed Dec. 15, 1970, Ser. No. 98,301
Int. Cl. G01n 21/30
U.S. Cl. 250—206 6 Claims

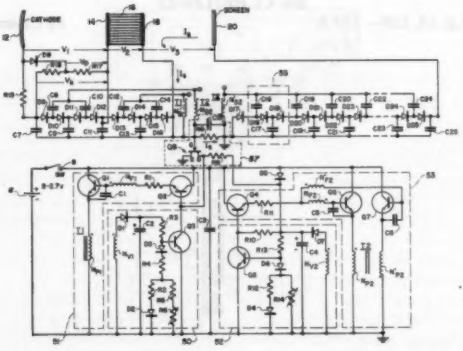


Presence or location of an object is detected or movement thereof is controlled by projecting light at the location where the object or the edge thereof is expected and detecting transmitted or reflected light by a photoelectric responsive device. The photoelectric responsive device is connected to a circuit which actuates either an indicator of the location of the object in the illuminated field or actuates mechanism for readjusting the position or direction of the movement of the object. The effect of variations in ambient or extraneous light or flashes of light is overcome by pulsing the projected light at a suitable rate and causing the photoelectric response circuit to be responsive only to electrical currents having the same pulse wave form as the light source with means for synchronizing the electric detector circuit with the light source.

3,739,178
AUTOMATIC BRIGHT SOURCE PROTECTION CIRCUIT AND POWER SUPPLY CIRCUIT FOR AN IMAGE INTENSIFIER

Sen-Te Chow, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 16, 1972, Ser. No. 253,744
Int. Cl. H01j 31/50
U.S. Cl. 250—213 VT 7 Claims



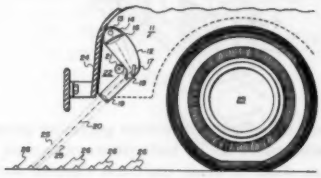
A bright source protection circuit and regulated power supply for an image intensifier tube in which the amount of screen current is sensed at the gate of an enhanced mode FET and the FET, in turn, controls voltage regulated oscillators in which the outputs of the oscillators furnish bias voltages to the cathode, to the electrodes on the microchannel plate, and to the screen within the image intensifier wherein these bias voltages change inversely to any change in the screen current. Since screen current flows in direct proportion to the amount of illumination emanating from the source being viewed, the brightness of the source being viewed by an operator looking through the image intensifier remains constant at the output of the image intensifier tube.

A clamping circuit between the cathode and the input electrode of a microchannel plate clamps the cathode operational voltage within the stable region of the cathode current-voltage characteristics. Pulsing outputs of the voltage controlled oscillators are transformer coupled to three voltage multipliers that provide separate direct current voltages to the cathode, to the input and to the output electrodes of a microchannel plate, and to the screen.

3,739,179
RADIATION SENSITIVE TRAFFIC WARNING SYSTEM

Iniz I. Krekow, 1060 Concord Street, San Diego, Calif.

Filed Jan. 7, 1971, Ser. No. 104,570
Int. Cl. E01c 23/16
U.S. Cl. 250—216 1 Claim

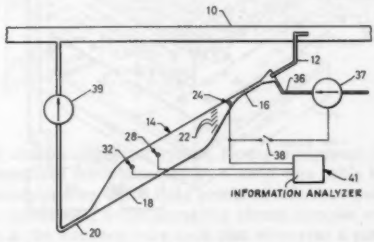


A traffic warning system for warning vehicles in the event of an attempt to enter a traffic lane in the wrong direction or crossing over a center line which will emit a loud signal as from the vehicle horn in which a reflective surface disposed on the center line and as seen by a vehicle crossing the center line and on any lane as seen by a vehicle attempting to proceed in the wrong direction in that lane which will reflect a collimated light projected by the vehicle and returned thereto through a discriminator which is coupled to the vehicle horn and a similar warning system which alerts vehicles as they are changing lanes proceeding in the correct direction whereby a reflective surface reflects the same collimated light in a different duty cycle which is passed through the discriminator sounding a soft alarm, such as a bell.

3,739,180
PARTICLE SIZE DISTRIBUTION ANALYSIS

John T. Martin Carlson, Edina, Minn., assignor to Terryl K. Qualey, St. Paul, Minn., part interest

Filed Sept. 28, 1970, Ser. No. 76,058
Int. Cl. G01n 21/26
U.S. Cl. 250—218 18 Claims



Apparatus and method for analyzing the size distribution of particles of similar density generally uniformly carried in a flow stream in a first section and segregated in the flow stream in a second section by forces acting on the particles according

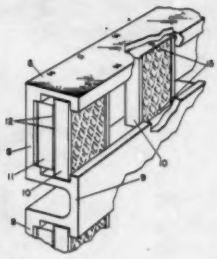
to their respective volumes in which the concentration by volume of all solids carried in the flow stream in the first section is measured, the concentration by volume of solids carried in the flow stream in the second section is measured at least at one predetermined position and the measurement made in the second section is divided by that made in the first section.

3,739,181

MAGNETICALLY POSITIONED CODING DEVICE

Charles S. Vincent, Jr., Stuarts Draft, and John R. Van Patten, Waynesboro, both of Va., assignors to General Electric Company, Salem, Va.

Filed Apr. 23, 1971, Ser. No. 136,854
Int. Cl. G01n 21/30
U.S. Cl. 250—219 D **3 Claims**



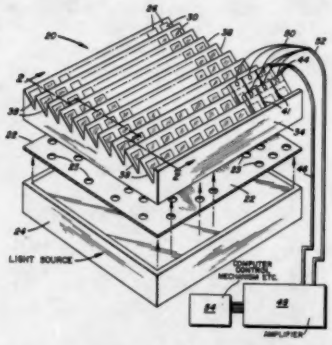
An arrangement for coding objects moving on a conveyor line comprising a code carrying device for mounting on the object wherein said device comprises tabs for spatially defining a coded message, said tabs and carrier being magnetized in a special manner to cause the tabs to assume desired, predetermined locations on the carrier in response to magnetic circuit coaction between carrier and tabs.

3,739,182

ENERGY SENSITIVE READOUT DEVICE

Donald Bertram Bickler, Temple City, Calif., assignor to Globe-Union Inc., Milwaukee, Wis.

Filed June 17, 1971, Ser. No. 154,059
Int. Cl. G08c 9/06
U.S. Cl. 250—219 DC **12 Claims**



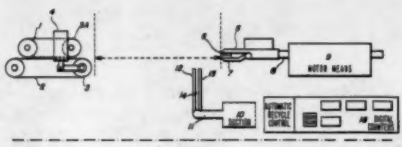
A compact energy sensitive readout device capable of transmitting light signals that yield a high degree of signal resolution from an indicia bearing surface by presenting a plurality of spaced shielded light transmitting conduits that form individual light pathways with the light receiving end of each arranged in a common plane and the light transmitting end of each symmetrically angled and having attached thereto a radiant energy cell responsive to the energy conducted through the conduit.

3,739,183

APPARATUS AND PROCESS FOR MEASURING FIBER LENGTHS

Roy Harold Burton, and Tony Lewis Baldwin, both of Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Oct. 15, 1970, Ser. No. 81,098
Int. Cl. G01n 21/30
U.S. Cl. 250—219 S **6 Claims**



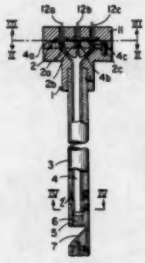
An apparatus and process are disclosed and claimed for measuring fiber lengths which involves the use of gripping means to hold the fibers together, a suction means for straightening the fibers between two substantially parallel transparent plates and counting means comprising at least one photocell mounted on a carriage with at least one fiber optic duct terminating in juxtaposition therewith.

3,739,184

METHOD AND APPARATUS FOR INSPECTING A BOTTLE

Takuma Katsumata, Inazawa; Hideo Uchiyama, Nishi-ku, Nagoya, and Yoshiharu Marita, Shows-ku, Nagoya, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Chujoda-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 826,472, May 21, 1969, abandoned. This application June 11, 1971, Ser. No. 152,081
Int. Cl. H01j 39/12
U.S. Cl. 250—223 B **12 Claims**



To detect foreign matter on the surface of a bottle, an instrument incorporating an optical fiber bundle is inserted into the bottle with incident light directed to the inlet end of the fiber bundle. Within the instrument, the optical fiber bundle is divided at its outlet end to provide separate optical signals which are converted into electrical signals for indicating the presence of foreign matter.

3,739,185
CIRCUIT SYSTEM FOR SWITCHES OF AN AUTOMOBILE

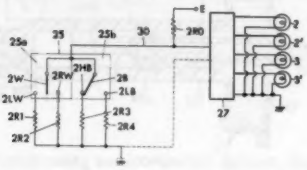
Tetsuji Shimizu, Showa-ku, Nagoya; Yoichi Hotta, Kita-ku, Nagoya, and Takaomi Yoshida, Nishi-ku, Nagoya, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusha, Nishikasugai-gun, Aichi Prefecture, Japan

Filed June 30, 1971, Ser. No. 158,371

Claims priority, application Japan, July 2, 1970, 45/57246; July 3, 1970, 45/57737; July 4, 1970, 45/58147; Aug. 31, 1970, 45/75738

Int. Cl. H02g 3/00

U.S. Cl. 307—10 R 12 Claims



A circuit system for switches of an automobile in which passive elements are respectively connected between contacts of the switches and a grounding, each of the switches or each group of the switches is connected to a signal detecting circuit through one signal line and said signal line is grounded through a contact corresponding to an operative position of the switch or the group of switches and the passive element, thereby to transmit a signal corresponding to said operative position of the switch or the group of switches for energizing a load corresponding to said signal. With such a circuit system, the switches can be made much small-sized and the signal line is prevented from being bulky. A possible trouble in a conventional switch system, such as a melting of a contact or a burning of a signal line can be well prevented.

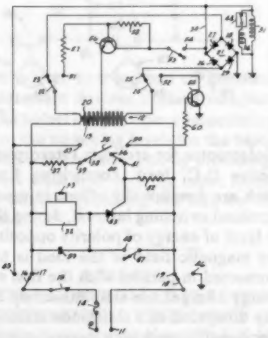
3,739,186
AC/DC SUPPLY CIRCUIT FOR AN APPLIANCE

Phillip E. Gokey, Whitewater, and Frederick A. Rose, Ft. Atkinson, both of Wis., assignors to Polar Ware Corporation, Sheboygan, Wis.

Filed Mar. 17, 1970, Ser. No. 20,367

Int. Cl. H02j ; H02m

U.S. Cl. 307—23 5 Claims



Both alternating and direct potentials are provided from either an alternating or a direct supply to control a low voltage, direct current operated solenoid valve of a burner and a high, alternating voltage operated igniter for the burner. A burner electrical supply circuit for connection to either type of electrical supply employs a transformer commonly associated and selectively connectable with a converter and an inverter respectively for step-down and step-up operation.

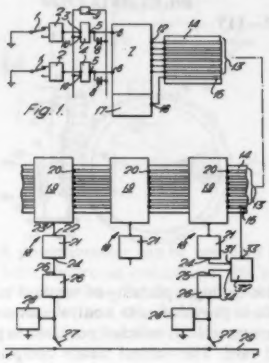
3,739,187
REMOTE SWITCHING SYSTEM

Arthur Richard Pottle, Cheshunt, England, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Sept. 12, 1972, Ser. No. 288,445

Int. Cl. H02j 3/00

U.S. Cl. 307—29 11 Claims



A remote switching system suitable for an automobile employs a power circuit supplied by the automobile battery and connected through electrical gates to loads such as lamps, windscreen wiper motor etc., the loads being associated with manual switches at the driving position, each of which when operated causes a unique binary signal to be emitted from an encoder, the bits of the binary signal being derived on different ones of parallel spaced conductors which transmit the binary signal to decoders associated respectively with the loads, one of the decoders reacting to a particular unique binary signal to open or close the associated electrical gate thus to connect or disconnect the load to or from the power circuit.

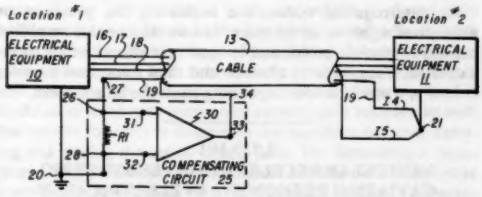
3,739,188
COMMON WIRE COMPENSATION CIRCUIT

Paul H. Froehling, Franklin, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Oct. 22, 1971, Ser. No. 191,737

Int. Cl. H02j 3/12

U.S. Cl. 307—103 6 Claims

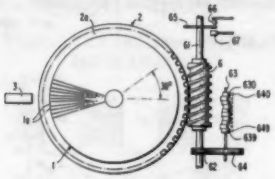


In an electrical control system having equipment at different locations interconnected by a multi-wire cable including a common wire which links points of reference potential for the equipment, a compensating circuit samples current flowing in the common wire such that whenever a potential difference exists between the reference points a current is generated in a compensating wire which is extended to one of the points of reference potential to minimize the current flow in the common wire thereby equalizing the potentials at the reference points.

3,739,189
DEVICE FOR STOPPING A TURNTABLE AT SELECTED POSITIONS

Shunkichi Igarashi, Tokyo, and Takeshi Okano, Nishinomiya, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 26, 1972, Ser. No. 257,207
Claims priority, application Japan, May 31, 1971, 46/37720
Int. Cl. H01h 47/24
U.S. Cl. 307—117 4 Claims

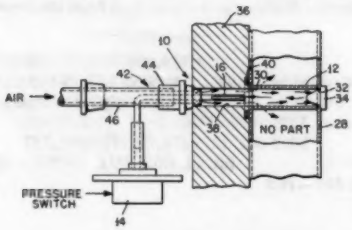


A turntable having a plurality of sections containing information cards is provided with control means for accurately stopping the turntable at selected positions to permit retrieval of a desired card. The control means comprises an arrangement of cams, cam-operated switches, and a photoelectric circuit including a light-interrupting disc continuously driven in synchronism with the rotation of the turntable.

3,739,190
PART INTERROGATION SYSTEM

Jay F. Whitsel, Southhampton, Pa., assignor to The Budd Company, Philadelphia, Pa.

Filed Dec. 6, 1971, Ser. No. 205,001
Int. Cl. H01h 35/24
U.S. Cl. 307—118 4 Claims



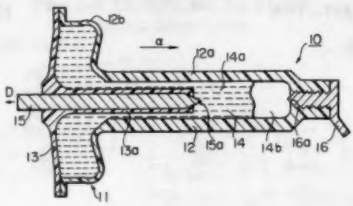
An interrogation system for indicating the presence or absence of a part or an aperture for a workpiece. An amplified pressure switch is positioned to receive a stream of air to indicate such presence or absence and then to control a power source to a machine tool depending upon the information.

3,739,191
VEHICULAR DECELERATION SENSOR USING CAVIATION PHENOMENA IN ELECTRICALLY CONDUCTIVE LIQUID

Yasuo Nagazumi, Tokyo, and Takeshi Mori, Yokohama, both of Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan

Filed Aug. 25, 1971, Ser. No. 174,661
Claims priority, application Japan, Aug. 25, 1970, 45/73855; Mar. 31, 1971, 46/19536; Mar. 31, 1971, 46/19537; May 15, 1971, 46/32720; May 15, 1971, 46/32721
Int. Cl. H01h 35/00
U.S. Cl. 307—121 18 Claims

Vehicular deceleration sensor using cavitation phenomena in a confined electrically conductive liquid. The deceleration sensor includes a container provided stationary relative to a vehicle and defining a chamber confining therein the conductive liquid such as mercury. A first electrode is mounted on the container and protrudes into the chamber for electrically contacting with the liquid. At least one second electrode is also mounted on the container at a spacing from the first electrode and protrudes into the chamber for electrically contacting with the liquid. Cavitation means is included in the container for bearing upon a force of inertia of the liquid, when an accelerating force is applied to the container, and for being

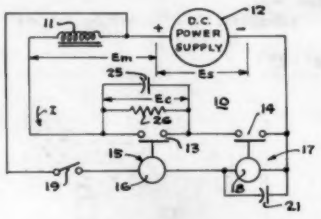


deformed by the inertia to form a cavity in the liquid between the first electrode and one of the second electrodes when the accelerating force is above a predetermined level. Deceleration of the vehicle can be detected by detecting at least one of the interruptions of electric current flowing between the first electrode and one of the second electrodes, in response to formation of the cavity. The characteristics of deceleration level and direction to be detected can be controlled by employing a suitable gate circuit in combination with the deceleration sensor.

3,739,192
NON-OSCILLATING ARCLESS SWITCHING OR INDUCTIVE D.C. LOADS

Joseph V. Oswald, 2852 South Central Park Avenue, Chicago, Ill.

Filed Nov. 24, 1971, Ser. No. 201,633
Int. Cl. H01h 9/30
U.S. Cl. 307—136 7 Claims

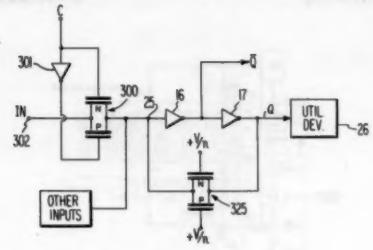


A circuit interrupter for arclessly interrupting current flow to an inductive D.C. load, comprising first and second switches which are functionally offset, in opening sequence, by a predetermined switching interval; during the switching interval, a like level of energy of polarity opposite to the energy stored in the magnetic field of the load is transferred to a capacitor connected in parallel with the first switch, whereupon both energy charges are simultaneously discharged into and thermally dissipated in a resistance connected in parallel with the capacitor. The switching interval corresponds to one-fourth cycle of the resonant frequency of the resonant circuit formed by the capacitor and the inductive load plus the RC and L/R time functions of the circuit; the resistance is selected, relative to the capacitor and the load inductance, to preclude oscillation of the load current during the time interval between the opening of the first and second switches. The capacitance is selected relative to the load inductance, to fix and limit the maximum voltages occurring in the course of the switching interval.

3,739,193
LOGIC CIRCUIT

Richard Lee Pryor, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 11, 1971, Ser. No. 105,546
Int. Cl. H03k *19/08*
U.S. Cl. 307—205 4 Claims

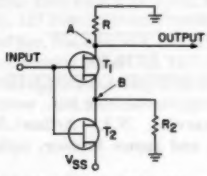


A logic circuit using semiconductor devices, especially of the MOS type, incorporating an intermediate circuit wherein information is continuously operated upon by a feedback path and without the necessity of switchable controls in the feedback path.

3,739,194
STATIC BIPOLAR TO MOS INTERFACE CIRCUIT

John A. Freeman, and David De Souza, both of Ottawa, Ontario, Canada, assignors to Microsystems International Limited, Montreal, Quebec, Canada

Continuation-in-part of Ser. No. 176,150, Aug. 30, 1971, abandoned. This application Jan. 17, 1971, Ser. No. 218,493
Claims priority, application Canada, July 21, 1971, 118,764
Int. Cl. H03k *19/40*
U.S. Cl. 307—214 4 Claims



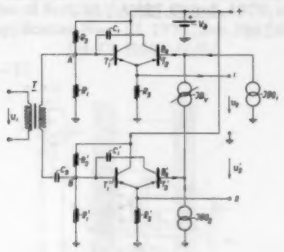
The invention relates to a method of interfacing between bipolar and field effect devices utilized complementarily in logic circuits. The invention provides compatibility virtually at all times between the switching levels for the bipolar and field effect devices and accomplishes this by providing source bias to the field effect transistor deriving input from the bipolar device, thereby effectively raising the turn-on voltage of the field effect transistor.

3,739,195
REMOTELY CONTROLLED ELECTRONIC DIFFERENTIAL RESISTANCE

Werner Fidi, Baden, and Ewald Kerschbaum, Maria Enzersdorf-Sudstadt, both of Austria, assignors to AKG Akustische u. Kino-Gerate Gesellschaft m.b.H., Wien, Austria

Filed Oct. 21, 1971, Ser. No. 191,513
Int. Cl. H03k *17/00*
U.S. Cl. 307—229 10 Claims

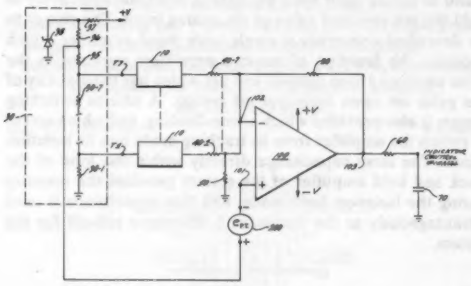
A remotely controllable electronic differential resistance comprises an amplifier and a control device. The amplifier can be either a cathode follower valve or a grounded collector transistor, and the control device is a transistor having its collector connected for alternating current to the input electrode of the amplifier, its emitter direct current coupled to the output electrode of the amplifier, and its base connected either to an adjustable source of DC current or to an adjustable source of DC voltage. A potentiometer can be provided by two serially connected such electronic resistances, the base of each control transistor being connected to one pole of a respective constant current source, and the bases of the two control transistors being interconnected through an adjustable current source.



3,739,196
FUNCTION GENERATOR

John R. Tavis, Mariposa, Calif., assignor to Tavis Corporation, Mariposa, Calif.

Filed Sept. 23, 1971, Ser. No. 183,067
Int. Cl. G06g *7/24*; H01h *35/00*
U.S. Cl. 307—229 9 Claims



A function generator comprises an openable and closeable series-circuit path having a node and which is closed only while a voltage at the node has a predetermined polarity with respect to a threshold voltage. An emitter-follower circuit has a transistor biased by a substantially constant voltage source and a resistor divider network. A transistor operated as a diode so as to have at most unity current-gain cooperates with the emitter follower to determine the transition between opening and closing the series-circuit path. The base-emitter junctions of the diode-operated transistor and the emitter-follower transistor have opposed voltage differences which are substantially equal despite temperature variations so that a highly precise transition is achieved. The closing of the series-circuit path causes current to flow therethrough and such current does not substantially affect the biasing of the emitter-follower because of its current gain characteristic.

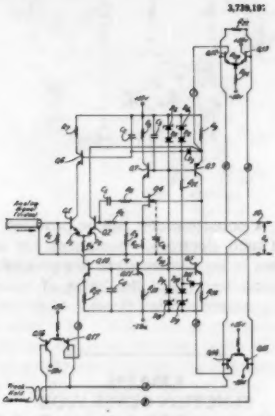
In a preferred embodiment, each of a plurality of shunting resistors is connectable in parallel with each other and in series with a voltage dropping resistor driven by an operational amplifier. Each shunting resistor is operatively connected at a different threshold so that the function generator has a nonlinear voltage transmission characteristic made up of a plurality of linear segments.

3,739,197

TRACK AND HOLD BUFFER AMPLIFIER

Robert S. Prill, Parsippany; Marshall A. Metzger, Totowa, and Bradley C. Eaton, Pompton Plains, all of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Nov. 8, 1971, Ser. No. 196,282
Int. Cl. H03k 17/00
U.S. Cl. 307—238 7 Claims



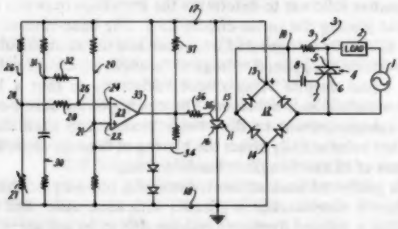
An improved track and hold buffer amplifier is provided which is capable of tracking wide band video analog input signals, and which responds to an appropriate binary command to isolate itself from the analog input and effectively to hold the last received value of the analog input. The circuit to be described comprises a single wide band amplifier which provides the function of the two amplifiers required in the prior art closed loop system, and yet which has the stability of the prior art open loop type of system. A unique switching system is also provided which is non-floating, and which serves to switch the amplifier from its tracking mode into its isolation mode. The stray capacitance directly within the loop of the track and hold amplifier of the system provides the memory during the isolation hold mode, and this capacitance is used advantageously as the dominant 6 db/octave roll-off for the system.

3,739,198

CAPACITOR FIRED THYRISTOR

Ralph E. Clements, Loves Park, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Filed June 21, 1972, Ser. No. 264,783
Int. Cl. H03k 17/00
U.S. Cl. 307—252 B 10 Claims



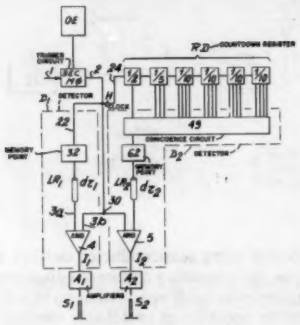
A capacitor is discharged through the control circuit of a thyristor to positively render the thyristor conductive.

3,739,199

GENERATOR OF A TIME INTERVAL AS A MULTIPLE OF A BASE PERIOD

Jacques Negrou, Gesta, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed Dec. 16, 1971, Ser. No. 208,607
Int. Cl. H03k 5/00
U.S. Cl. 307—260 8 Claims



A standard time interval having a well-defined duration for use as a time measurement reference is delimited by two fronts separated by N periods of an oscillation having a preferably rectangular waveform and produced by a frequency standard oscillator.

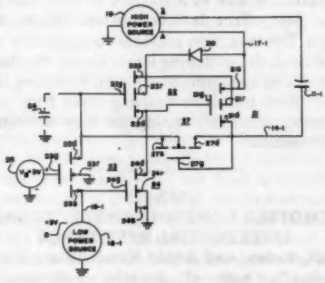
The generator comprises a trigger circuit which transmits clock pulses and synchronizes them with the fronts derived from the oscillator, a preset counting register operated by the clock pulses, two detectors for selecting the active clock-pulse fronts and each comprising a delay line, two amplifying circuits for collecting the active fronts and converting them into utilizable signals.

3,739,200

FET INTERFACE CIRCUIT

Michael V. D'Agostino, Mercerville, N.J., assignor to Michael D'Agostino, Mercerville, N.J.; Arthur Lief, Merrick; Hershel Harrison, and James Armour, both of New York, all of N.Y.

Filed Sept. 27, 1971, Ser. No. 184,000
Int. Cl. H03k 3/26
U.S. Cl. 307—304 6 Claims

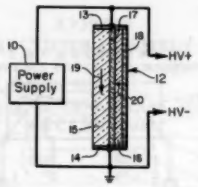


Field-effect transistor (FET) interface circuit for interfacing low power circuits with higher power circuits. The illustrated circuit employs complementary metal oxide semiconductor (C-MOS) devices to accomplish the interface function to a liquid crystal display element with minimal power dissipation and complexity.

3,739,201
HIGH VOLTAGE REGULATOR DEVICE

Robert Adler, Northfield, and George W. Hrbek, Arlington Heights, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed June 9, 1971, Ser. No. 151,337
Int. Cl. H01v 7/00
U.S. Cl. 310—8 8 Claims

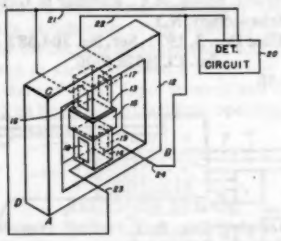


A film of semiconductor material shunts a source of high-voltage unregulated potential. The film is caused to act as an infinite series of infinitesimal field-effect transistors with gates of progressively higher potential. In response to a change in the value of the high voltage, the conductance of the semiconductive film is changed in a compensatory manner. In one version, the infinite series of gates is internally created within the film by piezoelectric action. In other approaches, the film is dielectrically coupled to a parallel strip of resistive material also coupled across the high-voltage source. The resistive strip provides the effective gate electrodes of the distributed field-effect transistor chain.

3,739,202
INSTRUMENT FOR RESPONDING TO MECHANICAL VIBRATION OF ACCELERATION AND FOR CONVERTING THE SAME INTO ELECTRIC ENERGY

Walter G. Cady, 127 Power Street, Providence, R.I.

Continuation of Ser. No. 496,346, Oct. 15, 1965, abandoned, which is a continuation of Ser. No. 785,068, Dec. 17, 1968, abandoned. This application Aug. 28, 1970, Ser. No. 68,052
Int. Cl. H04r 17/00
U.S. Cl. 310—8.3 11 Claims

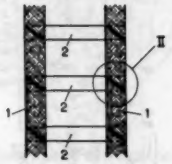


An instrument for responding to mechanical vibration or acceleration of a base comprising two piezoelectric or other suitable oppositely disposed normally unstrained electromechanical vibrators the outer ends of which are fastened to opposite parts of the base and the inner ends to an inertial member, which inner ends become simultaneously moved in substantially a single direction only, relatively to the base, in response to vibration or acceleration of the base in an opposite direction. In the case of piezoelectric crystals, the properties of shear or of compression can be utilized.

3,739,203
LINEAR INDUCTION MOTOR ARMATURES

Roland Joug, Nohanent, and Bernard Ragout, Clermont-Ferrand, both of France, assignors to Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes, Colombes, France

Continuation of Ser. No. 52,415, July 6, 1970, abandoned.
This application Nov. 12, 1971, Ser. No. 198,322
Int. Cl. H02k 41/02
U.S. Cl. 310—13 9 Claims

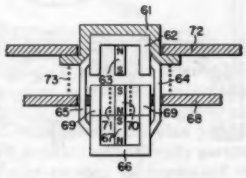


This invention relates to electrical armatures and according to the invention an armature, constituting a transport or conveying member adapted to be driven by the inductors of linear motors, is in the form of a squirrel cage made up of two flexible longitudinal members interconnected by transverse members. These transverse members are spaced apart by a distance of up to but not exceeding half the motor pole pitch and support members extend over the entire length of the armature and are less extensible than it. Finally, the armature and the support members are embedded in a flexible material such as natural or synthetic rubber or a synthetic plastics substitute therefor.

3,739,204
INPUT SIGNAL GENERATING DEVICE

Noboru Sugawara, and Takeshi Sawada, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 45,076, June 10, 1970, abandoned.
This application Mar. 6, 1972, Ser. No. 232,305
Int. Cl. H02k 35/00
U.S. Cl. 310—14 9 Claims



An input signal generating device for computers comprises a plurality of keys arranged on the keyboard each of which keys has means responsive to the depression of the associated key for magnetically producing an input signal to operate the operation unit. The means for producing the input signal comprise a coil and a magnetic member one of which is responsive to the depression of the associated key. The relative movement of the magnetic member and the coil induces voltage across the coil as an input signal.

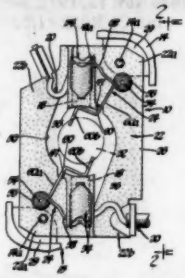
3,739,205
BRUSH AND SPRING HOLDER ASSEMBLY

Herbert E. Winkelmann, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 21, 1972, Ser. No. 282,607
Int. Cl. H02k 15/00; H01r 39/40
U.S. Cl. 310—42 3 Claims

In a preferred form, this disclosure relates to a brush and spring holder assembly for a dynamoelectric machine having a

housing, a current collector and a brush for engaging the current collector and which comprises a mounting plate that is adapted to be supported within the housing and which has guide means for supporting and guiding the brush for radial movement toward the current collector. The assembly also comprises a pre-stressed spring means which is supported on the mounting plate and which has first and second portions for



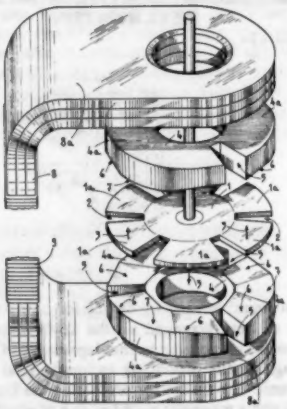
engaging the brush at opposite ends to biasingly retain the brush within the guide means. The first portion is disposed within the path of movement of the current collector as the latter is assembled within the housing and is moved by the current collector to disengage the brush when the current collector is assembled within the housing whereby the second portion biasingly moves the brush into engagement with the current collector.

3,739,206

STEPWISE RUNNING ELECTROMAGNETIC MOTOR

Marlyse Schwarzmuller-Joch, Bienne, and Michel Schwab, Port, both of Switzerland, assignors to Omega Louis Brendt & Frere S.A., Bienne, Canton of Bern, Switzerland

Filed Jan. 4, 1972, Ser. No. 215,378
Int. Cl. H02k 37/00
U.S. Cl. 310—49 **5 Claims**



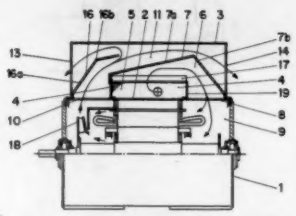
The stepwise running motor includes a disc shaped rotor having a plurality of magnets arranged in a generally circular manner. The magnets are of alternating plurality and the field of the magnets follows a direction parallel to the shaft of the rotor. The rotor is located between two annular pole pieces each of which has a plurality of pole shoes also arranged in a generally circular manner, the number of pole shoes being equal to half the number of the magnets of the rotor. The axial side of each of the shoes which faces the rotor between the pole pieces is cut at least partially slantwise with respect to a plane at a right angle to the motor shaft such that a transient magnetic field generated in the polar pieces produces stepwise forward motion of the rotor.

3,739,207

WEATHER-PROTECTED ELECTRIC MACHINE WITH AXIALLY CIRCULATING VENTILATION

Philipp Kellmann, Mannheim, and Helmut Gaertner, Viernheim, both of Germany, assignors to Brown Boveri & Company Limited, Baden, Switzerland

Filed Sept. 23, 1971, Ser. No. 183,008
Claims priority, application Germany, Oct. 1, 1970, P 20 48 255.7
Int. Cl. H02k 9/00
U.S. Cl. 310—59 **2 Claims**



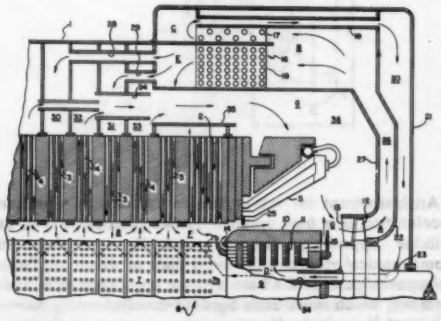
An axially ventilated dynamo-electric machine for outdoor use includes a rectangular casing located stop the machine housing which is also rectangular, there being an air inlet through a longitudinal wall of the casing into an air entry chamber located within the casing. A baffle arrangement within the casing provides a passageway closed off from the remainder of the space within the casing through which filtered air discharged from the air entry chamber is directed through an opening at one end of the machine housing to the interior thereof for flow axially of the machine to cool it, and this air after passing to the opposite end of the machine housing is delivered through an outlet in the housing into the casing from whence it is discharged to the exterior through outlets provided in the end walls of the casing. A second baffle structure located in the casing at the air outlet from the machine housing and which partially overlaps the first mentioned baffle arrangement cooperates with the latter in directing the air discharge and the entire ventilating structure is so structured that air flow through the machine housing is assured regardless of the direction or strength of the wind.

3,739,208

REVERSE FLOW COOLING SYSTEM FOR A DYNAMOELECTRIC MACHINE

Allan C. Shartrand, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 3, 1971, Ser. No. 204,582
Int. Cl. H02k 9/00
U.S. Cl. 310—58 **8 Claims**



A dynamoelectric machine with internal gas cooling system has a reverse flow pattern with gas flowing from the fan

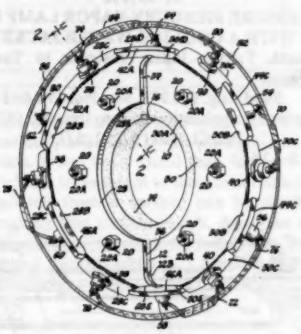
through the coolers and then to the parts to be cooled. The gas is separated into two flow portions at the cooler, one portion undergoing a low pressure drop and then serving to cool the rotor end turns and transition section, the other undergoing a relatively high pressure drop and then serving to cool the stator core and to supply the gas gap for "gap pickup" cooling of the rotor body.

3,739,209

RECTIFIER ASSEMBLY

Walter Drabik, Downers Grove, Ill., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 31, 1972, Ser. No. 285,551
Int. Cl. H02k 9/04
U.S. Cl. 310—64 **3 Claims**



A rotatable rectifier assembly which can be used to feed the field winding of a generator from an exciter generator that has a three-phase Y-connected output winding. The rectifier assembly comprises an annular insulator which carries three heat sinks on one side thereof and two heat sinks on the opposite side thereof. The three heat sinks form AC input terminals for the rectifier assembly and carry diodes forming part of a three-phase full-wave bridge rectifier circuit. The other two heat sinks also carry diodes and form direct current output terminals for the rectifier assembly. The heat sinks, when secured to the insulator, form alternate notches and flanges and the diodes are mounted on the flanges such that they extend generally peripherally of the assembly to facilitate connection of the diodes. The arrangement is such that two diodes are connected in series between a respective direct current output terminal and an AC input terminal and all of the diodes are mounted on heat sinks to facilitate operating the diodes at a proper temperature.

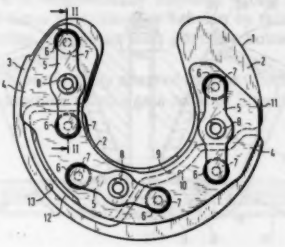
3,739,210

RECTIFIER BRIDGE

Walter Bahlinger; Herbert Vogt, and Helmut Fischer, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed July 31, 1972, Ser. No. 276,656
Claims priority, application Germany, Aug. 6, 1971, P 21 39 607.6
Int. Cl. H02m 7/52
U.S. Cl. 310—68 D **5 Claims**

Rectifier bridge in the form of two insulated bus bars extending in the same plane and at least four disk cells, which may be diodes, maintained in current conductive engagement with the bus bars by leaf springs. Each leaf spring is connected to a bus bar intermediate its ends and presses one disk cell into conductive engagement with a bus bar at one end and another disk cell in conductive engagement with another bus bar at its opposite end. The leaf springs are insulated from the bus bars



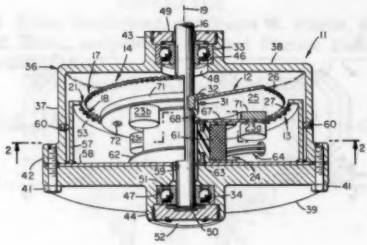
and may be riveted thereto and the electrical connection may be directly through the rivets and the output terminals of a three-phase alternating current generator.

3,739,211

MAGNETIC TACHOMETER

Alfred Hasler, Mountain View, Calif., assignor to Amper Corporation, Redwood City, Calif.

Filed Oct. 15, 1971, Ser. No. 189,685
Int. Cl. H02k 19/24
U.S. Cl. 310—168 **7 Claims**



A pair of toothed elements of magnetically permeable material are coaxially mounted for relative rotation with their teeth spaced opposed in rotational registration. The toothed elements are further mounted in magnetic circuit with magnets and a coil whereby magnetic flux provided by the magnets follows two separate magnetically parallel flux paths including the pair of toothed elements and the coil. As the toothed elements are relatively rotated, the net reluctance of the flux path through the tooth elements varies and causes a voltage to be induced in the coil which alternates at a frequency representative of the relative speed of rotation of the toothed elements. The other of the magnetically parallel flux paths is of a fixed reluctance and does not extend through the pair of toothed elements.

3,739,212

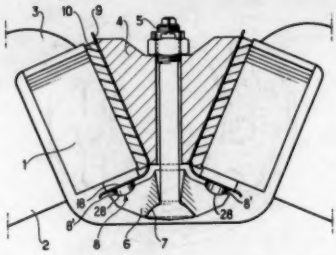
DEVICE FOR THE WEDGING OF COILS OF ROTORS OF ELECTRIC MACHINES

Robert Koelbel; Joseph De Vaulx; Roger Gillet, all of Belfort, and Christian Lehuen, Cravanche, all of France, assignors to Societe Generale De Constructions Electriques Et Mecaniques (alsthom), Paris, France

Filed Oct. 4, 1971, Ser. No. 186,421
Claims priority, application France, Oct. 6, 1970, 7036130
Int. Cl. H02k 3/18
U.S. Cl. 310—194 **3 Claims**

The invention relates to the wedging of coils on the rotors with salient poles of electric machines with wedges put

between the coils. The wedges are kept in place through studs which connect them through ball-and-socket joints to attachment pieces resting under two adjacent coils. Such a wedging is especially useful in long machines wherein the rotor is subjected to extensive heating.



3,739,213

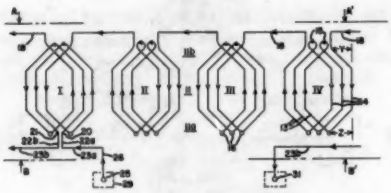
COMPACT CONNECTION SYSTEM FOR POLYPHASE ARMATURE WINDING

David M. Willyoung, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed June 15, 1972, Ser. No. 263,254

Int. Cl. H02k *3/00*

U.S. Cl. 310—198 **14 Claims**



An armature winding, comprising series connected phase belts which in turn comprise series-connected coils, is connected in a compact manner by using coil conductors with equal end-arm span at opposite ends and non-radial (slanted) connecting elements between coil conductors plus phase belt jumper connections at a first end to advance the winding in the direction of current flow. Connections to the phase terminals can be made at the other end, permitting separation of the line end and neutral end terminals in substantially diametrically opposite peripheral locations. This minimizes the axial span requirements per phase for winding connections and phase terminals and is useful for the construction of generators with multiple sets of polyphase output (e.g., six phase generators).

3,739,214

DEVICE FOR CLAMPING A WINDING BAR IN TANGENTIAL DIRECTION

Torbjorn Johansson, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

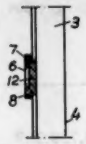
Filed Nov. 1, 1971, Ser. No. 194,314

Claims priority, application Sweden, Nov. 2, 1970, 14727/70

Int. Cl. H02k *3/48*

U.S. Cl. 310—214 **2 Claims**

A winding bar is clamped in a tangential direction in a winding slot in a rotating machine, which is also provided with an axially directed slot wedge arranged at the opening of the slot, by providing a radially directed positioning groove in one of the slot walls with a wedge device in this groove exerting pressure on the winding bar. The wedge device comprises two side wedges, which may be connected into a single unit, and which have sliding surfaces facing each other converging in tangential and radial directions and engaging an intermediate wedge which can be inserted in the radial direction between the two side wedges.



3,739,215

HIGH-PRESSURE MERCURY VAPOR LAMP PROVIDED WITH A COOLING WATER JACKET

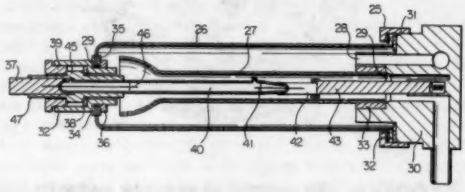
Kaoru Murai, Tokyo, Japan, assignor to Yoshio Yazaki, Tokyo, Japan

Filed Aug. 9, 1971, Ser. No. 170,095

Claims priority, application Japan, Dec. 24, 1970, 45/129811

Int. Cl. H01j *61/52, 61/35*

U.S. Cl. 313—24 **3 Claims**



A lamp assembly, which is a combination of a capillary type high-pressure mercury vapor lamp and a water cooling jacket, said combination being convenient for replacement and mounting of the lamp. The jacket also effectively absorbs the thermal radiation from the lamp and discharges air bubbles from the jacket.

3,739,216

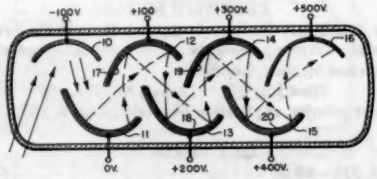
SECONDARY ELECTRON MULTIPLIERS WITH SINGLE LAYER CERMET COATINGS

Serge Pakswer, Elmhurst, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed July 30, 1971, Ser. No. 167,794

Int. Cl. H01j *1/32, 43/04*

U.S. Cl. 313—95 **2 Claims**



Secondary electron multiplier devices having one or more secondary electron emission multiplier elements each consisting essentially of a single-layer cermet coating on a supporting substrate. The coating may be formed by various techniques

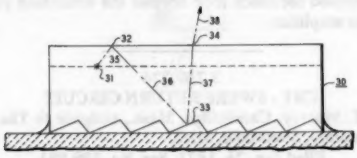
including flash evaporation, vacuum sputtering, and chemical vapor deposition. Secondary emission ratios of two, three and more are attained with first cross-over voltages in the range from 20 to 40 volts. In applications where optimum temperature stability is required, gold/metal oxide cermets are employed.

3,739,217

SURFACE ROUGHENING OF ELECTROLUMINESCENT DIODES

Arpad A. Bergh, Murray Hill, and Robert H. Saul, Scotch Plains, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 23, 1969, Ser. No. 835,383
Int. Cl. H01j *1/62, 63/04*
U.S. Cl. 313—108 R 6 Claims



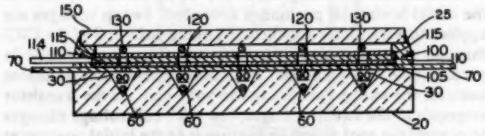
The emission of light from a high index of refraction electroluminescent body is limited by the phenomenon of total internal reflection. It has been found that, for devices of those materials which are transparent to their own radiation, such as GaP, the emission from a surface can be significantly increased by making that surface rough. Also, the spacial distribution of the emitted light can be influenced by the selection of rough and smooth surfaces. Chemical and alternative mechanical roughening processes are disclosed.

3,739,218

DISPLAY PANEL HAVING METAL CELL SHEET

Thomas C. Maloney, Bernardsville, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 16, 1970, Ser. No. 89,549
Int. Cl. H01j *61/04*
U.S. Cl. 313—188 13 Claims



A display device including a plurality of communicating gas-filled display cells arrayed in a panel structure. A first layer includes a first plate having grooves in it, with first electrodes seated in the grooves, and second electrodes supported across them. A second layer includes a metal plate or sheet electrode having apertures in it and being insulated from the second electrodes and from third electrodes which are disposed above it. The first and second electrodes cross beneath the apertures and the third electrodes lie above the apertures, which serve as the display cells of the device.

3,739,219

ELONGATE LIGHT BLOCK ASSEMBLY LAMP

James A. Carley, Rolling Hills, Calif., assignor to Los Angeles Miniature Products, Inc., Torrance, Calif.

Filed Sept. 24, 1971, Ser. No. 183,406
Int. Cl. H01j *1/94*; H01k *1/00*
U.S. Cl. 313—278 2 Claims

An electrically operated lamp that includes an elongate, transparent envelope having two tubular legs extending outwardly in the same direction from the ends thereof, the legs being substantially normal to the longitudinal axis of the envelope. At least one elongate refractory element that may be brought to incandescence by passage of an electric current therethrough is longitudinally disposed within the envelope and is at all times maintained in tension by two electric current-conducting springs at least partially housed within the legs.

The lamp is particularly adapted for use with light block assemblies to produce an elongate zone of illumination of substantially uniform intensity through which multiple channel punched cards or punched tape pass. A light from this zone passes through openings in the cards or tape to actuate a light-sensitive receptor.

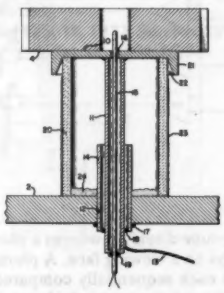
The possibility of one or more channels of coding or decoding being lost due to individual lamp failures is eliminated, when a lamp of the present invention is used as a source for the zone of uniform light intensity. This zone extends transversely across the punched card or tape as the card or tape moves through a predetermined position.

3,739,220

WORKPIECE SUPPORT FOR GLOW DISCHARGE APPARATUS

Claude K. Jones, Marblehead, and Stuart W. Martin, Salem, both of Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed May 8, 1972, Ser. No. 251,274
Int. Cl. H01j *1/88*
U.S. Cl. 313—281 5 Claims



An insulating support for the workpiece in a glow discharge apparatus. A workpiece table rests on and forms an acute angle with an insulating ceramic tube. A thin poorly conductive layer of sputtered metal deposit on the exterior of the tube, except at the location of the table and tube junction, forms a self-adjusting layer with a continuous potential gradient which supporeses arcing after the glow is established.

3,739,221

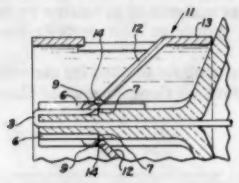
ELECTRIC LAMP BASE END STRUCTURE

James R. DeBleyker, Cleveland, Ohio, and William A. Hickox, Memphis, Tenn., assignors to General Electric Company, Schenectady, N.Y.

Filed Sept. 30, 1971, Ser. No. 185,119
Int. Cl. H01j *5/50*
U.S. Cl. 313—318 2 Claims

An electrical device with a stem press with a groove therein terminating in an end wall and having a lead wire bent around

the edge of the stem press and placed in the groove so as to extend beyond the end wall to an area of the press behind the



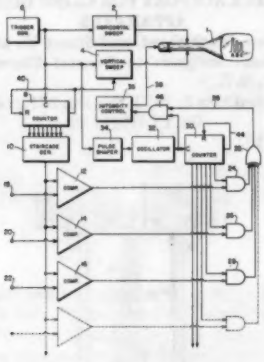
end wall. A hollow metal base fitted over the stem press has an inwardly directed tongue resiliently clamping the lead wire against the portion of the stem press behind the end wall.

3,739,222

BAR-GRAPH DISPLAY APPARATUS

Edward T. E. Hurd, III, Cinnaminson, N.J., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 20, 1970, Ser. No. 65,507
Int. Cl. H01j *29/70*
U.S. Cl. 315—22 **12 Claims**



A cathode-ray-tube display produces a plurality of separate bar-graph displays on a viewing face. A plurality of individual input signals are each sequentially compared with an output level from a staircase generator during a single horizontal sweep of the CRT viewing face. A vertical sweep circuit is arranged to move the CRT beam in sequence along a plurality of horizontal levels while a counter means synchronizes the aforesaid comparison operation with a movement of the CRT beam along each horizontal level. Each equality between the compared signals during the comparison operation produces an intensity turn-on control signal for the CRT to effect a display of a horizontal level segment of a corresponding display bar.

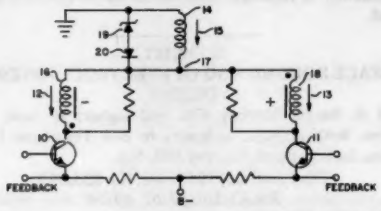
3,739,223

VOLTAGE-ON-DEMAND DEFLECTION AMPLIFIER

Orten Henry Symer, Wantagh, and Winfield Scott Bearce, Commack, both of N.Y., assignors to Orwin Associates Inc., West Babylon, N.Y.

Filed Mar. 30, 1970, Ser. No. 23,741
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 TD **3 Claims**

A deflection amplifier which provides a boost voltage required for fast magnetic deflection of a cathode ray tube electron beam while affording means for maintaining a con-



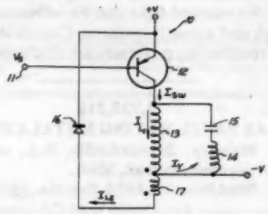
tinuous closed feedback loop around the deflection yoke and the driver amplifier.

3,739,224

CRT - SWEEP RETURN CIRCUIT

Walter T. Morrey, Cambridge, Mass., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jan. 26, 1971, Ser. No. 109,881
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 TD **10 Claims**



A circuit for returning the sweep of a cathode ray tube to the initial horizontal position is described. Sweep voltages are applied to a transistor and directed to the yoke coil of the CRT through a linear high-voltage DC coil. The linear coil is in parallel with the yoke coil, and conduction of the transistor controls the sweep voltages to the yoke coil. As the transistor responds to the sweep voltages, the yoke coil voltage changes to control the spot sweep and return it to the initial position at the end of each sweep. A diode causes the circuit to discharge into the power supply to greatly increase the efficiency of the circuit.

3,739,225

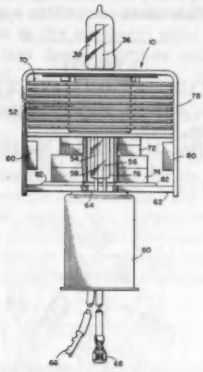
MICROWAVE MAGNETRON

James R. Mims, Acton, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Apr. 24, 1972, Ser. No. 247,080
Int. Cl. H01j *25/50*
U.S. Cl. 315—39.51 **6 Claims**

A combined RF seal, magnetic path and airflow path-defining means are provided for permanent-magnet-type magnetrons utilized in microwave heating. Spacer members of a ferromagnetic material are disposed between magnetic field pole piece means and the magnet means to assist in the magnetic field orientation and provide for improved circulation of

a fluid medium. The efficiency of the magnetic circuit is enhanced by the more efficient cooling of magnet members.



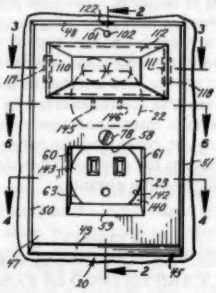
Any RF energy leakage along the electrical leads connecting the magnetron to the high voltage electric supply is also effectively suppressed.

3,739,226

EMERGENCY LIGHT UNIT FOR MOUNTING TO AN ELECTRICAL WALL OUTLET

William A. Seiter, and Calvin J. Christensen, both of Fenton, Mo., assignors to said Christensen, by said Seiter

Filed Sept. 8, 1971, Ser. No. 178,636
Int. Cl. H05b *37/04*
U.S. Cl. 315—86 12 Claims



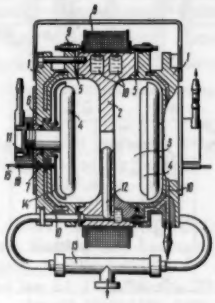
This invention relates to an emergency light unit of a size for plugging into a standard electrical wall outlet. The unit is self-contained and includes means for energizing the light when the main electrical power fails and the ambient light in the area in which it is mounted is below a prescribed level. The light is powered during emergency conditions from rechargeable batteries which are continuously and automatically charged when the main power is operational. All of the components of the unit, including the batteries, are mounted in a casing of unitary construction at the front of which are exposed light bulbs for supplying the emergency light, the light-sensitive surface of a photocell for sensing the ambient light level in the area, and an electrical utility outlet. Means accessible from the front of the unit are also provided for testing its operability. The unit is plugged into a standard electrical wall outlet with the cover plate removed and is secured in the same manner as a conventional cover plate.

3,739,227

GAS-DISCHARGE SWITCHING DEVICE

Alexandr Ivanovich Nastjukha, ulitsa Raspeitina, 11, kv. 15; Oleg Georgievich Bespalov, Smolenskaya naberezhnaya 2, kv. 65; Andrei Serafimovich Knyazyatov, ulitsa Rogova, 5, kv. 131; Pavel Alexandrovich Smirnov, B. Cherkizovskaya, 10, korpus 1, kv. 7, and Alexandr Nikolaevich Udovenko, ulitsa Rogova, 4, korpus 10, kv. 1, all of Moscow, U.S.S.R.

Filed June 5, 1972, Ser. No. 259,952
Int. Cl. H01j *17/14*
U.S. Cl. 315—338 2 Claims



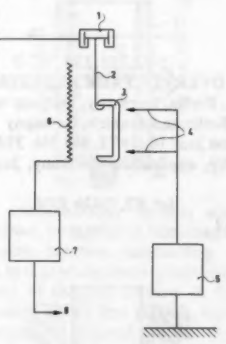
A gas-discharge switching device comprising: a hollow cathode in the form a closed chamber; a barrier dividing the above-mentioned chamber so as to form at least two discharge chambers; at least two anodes each of which is arranged within each of the discharge chambers: a means for arc firing.

3,739,228

APPARATUS FOR TESTING ELECTRICAL CONTACT BETWEEN METALLIC OBJECTS

Marcel Point, Grenoble, France, assignor to Air Industrie, Courbevoie, France

Filed Feb. 18, 1972, Ser. No. 227,361
Int. Cl. B05b *5/00*
U.S. Cl. 317—3 10 Claims



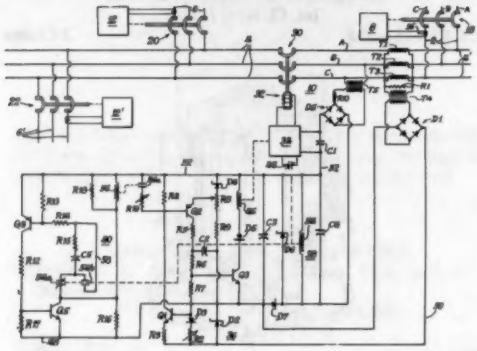
A device for preventing risks of fire or explosion due to electric sparks which may be produced at the attachment or suspension contacts of metal objects on which an electrostatic coating is intended to be applied, said device comprising means for inducing an electric charge on said metal object, and also means for giving an information when said electric charge reaches a pre-determined dangerous value. The charge-inducing means may utilize the existing high-tension source employed for the electrostatic coating, acting from a distance, and may comprise a variable-threshold charge-detection device adapted to trip a safety, alarm or indicator means. The device can be used in automatic electrostatic painting and powder-applying installations.

3,739,229

OVERCURRENT SENSING AND RESTRAINT CONTROL FOR SECTIONALIZING SWITCH

Richard J. Moran, Milwaukee, Wis., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Sept. 20, 1971, Ser. No. 182,079
Int. Cl. H02h 7/26
U.S. Cl. 317—22 15 Claims



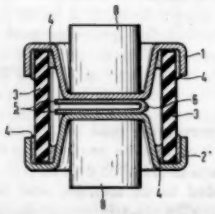
A sectionalizing switch control having a ground fault current sensing circuit and a restraint circuit including voltage or current sensing means. The restraint circuit restrains operation of the switch control and restrains operation of the ground fault sensing circuit due to load current inrush when voltage or current initially becomes present at the sectionalizing switch. The sectionalizing switch control and the ground fault sensing circuit both obtain operating power from system voltage at the sectionalizing switch. When voltage or current is initially sensed at the sectionalizing switch by the sensing means, the restraint circuit modifies the ground fault sensing circuit so that it will not respond to inrush load current to produce an output indicative of fault current. The restraint circuit includes a timing circuit which maintains the change initiated by the sensing means for a predetermined length of time.

3,739,230

OVERVOLTAGE ARRESTER

Gerhard Lange, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Jan. 10, 1972, Ser. No. 216,524
Claims priority, application Germany, Jan. 13, 1971, P 21 01 417.5
Int. Cl. H02h 9/06
U.S. Cl. 317—62 4 Claims



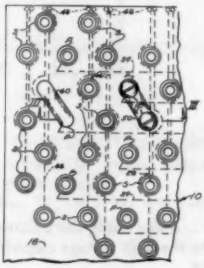
An overvoltage arrester having a pair of electrodes received in a gas tight housing with the electrode surfaces arranged in a spaced, facing relationship characterized by at least one of the electrode surfaces of the pair of electrodes being coated with a small metal sheet which has a diameter greater than the diameter of the electrode surface. In an embodiment of the invention, the metal sheet has a dish-shaped recess at its center and is connected to the surface of the electrode at the dish-shaped recess so that the peripheral edge of the sheet is spaced from the surface of the electrode and the opposite electrode.

3,739,231

INTERCONNECTION MATRIX BOARD

Frank K. Luteran, Jackson, Mich., assignor to Sparton Corporation, Jackson, Mich.

Filed Nov. 26, 1971, Ser. No. 202,315
Int. Cl. H05k 1/04
U.S. Cl. 317—101 CE 11 Claims



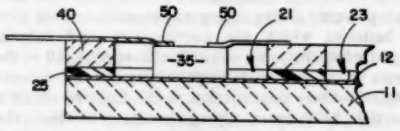
An electrical matrix board of dielectric material having a printed circuit defined upon two surfaces thereof and including a plurality of metallic terminals defined thereon in a plurality of sets, the terminals being related such that each set includes a central terminal surrounded by secondary terminals arranged in a hexagonal configuration, and the distance between adjacent secondary terminals defining a set, and between such secondary terminals and the associated primary terminal being equal. The terminals include connection means, preferably in the form of an axial passage, a portion of which may be threaded to receive a screw connector. The terminal sets are arranged on the matrix board in groups, whereby a printed circuit interconnects the primary terminals of sets in different groups, and selected terminals of sets within the same group are also interconnected by a printed circuit. Bridge means permits interconnection of selected terminals within the same set or group and the printed circuits include taps disposed adjacent the edge of the matrix board for connecting the board into other circuitry.

3,739,232

INTERCONNECTED ELECTRICAL CIRCUIT BOARD ASSEMBLY AND METHOD OF FABRICATION

Norman J. Grossman, Malibu; Kermit K. W. Held, Gardena; Richard D. Pittman, Thousand Oaks, and Ralph E. MacDougall, Woodland Hills, all of Calif., assignors to Northrop Corporation, Los Angeles, Calif.

Filed Apr. 10, 1972, Ser. No. 242,569
Int. Cl. H05k 1/04
U.S. Cl. 317—101 CP 7 Claims



An electrical circuit board assembly is formed by first depositing a conductive material on a substrate which forms both a ground and a heat sink for components subsequently

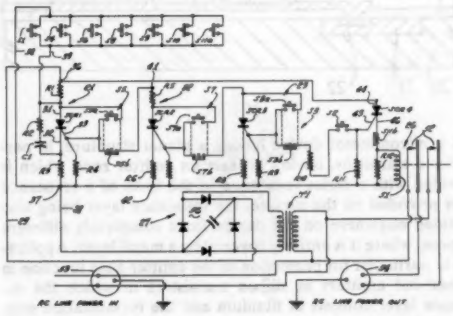
mounted thereon. A cavity pattern is then formed in a dielectric material placed over the conductive layer to form an alignment plate, the pattern in the plate being designed to receive various components which are placed therein. An etched circuit board which has apertures therein corresponding to the cavities in the alignment plate and having beam leads extending into these apertures and from the edges thereof, is placed over the alignment plate in alignment therewith, with the beam leads contacting corresponding terminals on the components mounted in the cavities. With the components resting on the conductive layer in the cavities but not attached thereto, and with the beam leads contacting but not attached to the component terminals, the unit is tested both electrically and mechanically and any faulty components replaced. After all testing and replacement of faulty components has been completed, the components are bonded in their aligned positions to the conductive layer on the substrate and the beam leads are bonded to associated terminals of the components.

3,739,233

ELECTRONIC COMBINATION LOCK

Andrew C. Edelson, 10832 Charnock Road, Los Angeles, Calif.

Filed May 26, 1972, Ser. No. 257,108
Int. Cl. E05b *49/00*
U.S. Cl. 317—134 19 Claims



An electronic combination lock in which a plurality of silicon controlled rectifier (SCR) circuit stages are interconnected by a plurality of manually operable push button switches such that each of the serial stages starting with a first SCR circuit stage must be triggered to a conducting state before a succeeding SCR circuit stage is enabled for triggering. A final and output circuit stage serves as an output lock control means for unlocking a secured area. Thus, a preselected operating sequence of the push button switches is required in order to activate the lock control. Trial and error attempts to break the code are hindered by a plurality of additional push button switches connected to drive each of the SCR circuit stages to their non-triggered or normal condition thereby scrambling the lock and requiring a new application of the entire combination sequence.

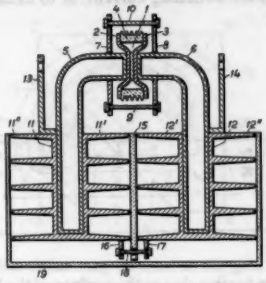
3,739,234

SEMICONDUCTOR DEVICE HAVING HEAT PIPE COOLING MEANS

Per Ake Bylund, and Gunnar Mellgren, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Jan. 28, 1971, Ser. No. 110,721
Claims priority, application Sweden, Feb. 24, 1970, 2336/70
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317—234 R 5 Claims

A semiconductor device has a semiconductor element arranged for double-sided cooling. At least one heat pipe is provided having one or more bends therein, one end of the heat pipe being in contact with the semiconductor element and the other end being in heat exchange relation with a heat exchanger provided with cooling flanges.

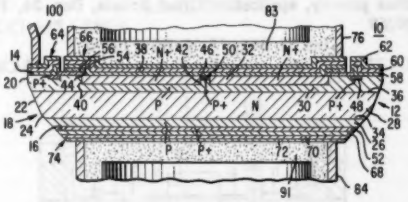


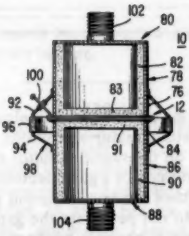
3,739,235

TRANSCALENT SEMICONDUCTOR DEVICE

Sebastian William Kessler, Jr., Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 31, 1972, Ser. No. 222,244
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317—234 R 11 Claims





A transcalent semiconductor device, which may be a thyristor or transistor, comprises a semiconductor body having an emitter-gate junction intersecting a first surface thereof, adjacent to a gate electrode preferably disposed at or near the periphery of the first surface. A first heat pipe is formed with a portion of the first surface, including the junction-surface intersection, internal thereto. Opposite the first surface is a second surface of the body, which may be internal to a second heat pipe formed therewith.

3,739,236

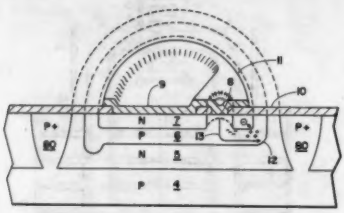
SEMICONDUCTOR SWITCHING DEVICE

Alberto Loro, Ottawa, Ontario, Canada, assignor to Microsystems International Limited, Montreal, Quebec, Canada

Filed July 19, 1971, Ser. No. 163,821
Claims priority, application Great Britain, Feb. 23, 1971, 5,257/71
Int. Cl. H01l *11/00*
U.S. Cl. 317—235 R 22 Claims

A four layer two terminal semiconductor switch having a preferred lowest resistance current path from its base contact

through the base adjacent the emitter. Means are provided to cause a particular position or region of the base periphery to break down at the switching current, or to cause base current



to flow to a conductive ring at the surface of the base; whereby an emitter-biasing voltage is set up in the base. Good individual control of both the switching current (I_S) and the holding current (I_H) is thus afforded.

3,739,237

METHODS OF MANUFACTURING INSULATED GATE FIELD EFFECT TRANSISTORS

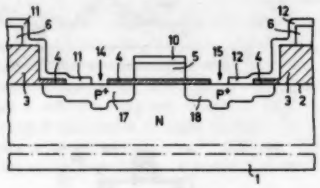
John Martin Shannon, Reigate, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 18, 1970, Ser. No. 99,616

Claims priority, application Great Britain, Dec. 24, 1969, 62,909/69

Int. Cl. B01j *17/00*; H01l *11/00*

U.S. Cl. 317—235 R 12 Claims



A method of making an IGFET by implantation techniques is described. The method features provision of the source and drain contact metal on the semiconductor surface and an adjoining insulator, provision of a gate electrode structure which will mask ions, and then ion bombardment under such conditions that the ions do not penetrate the gate electrode structure thereby defining a channel precisely aligned with the gate, but ions do penetrate the adjacent structure to form in the underlying semiconductor source and drain surface regions wholly defined by the implantation and whose p-n junctions terminate under the insulator. Upon completion, the source and drain contacts for the source and drain regions are automatically established. Various methods are described for controlling the locations where the ions are masked or are permitted to penetrate into the semiconductor.

3,739,238

SEMICONDUCTOR DEVICE WITH A FIELD EFFECT TRANSISTOR

Hisashi Hara, Kanagawa, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

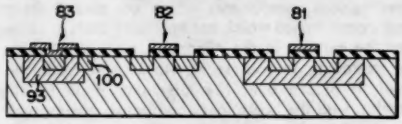
Filed Sept. 22, 1970, Ser. No. 74,459

Claims priority, application Japan, Sept. 24, 1969, 44/75231; Sept. 24, 1969, 44/75232; Jan. 14, 1970, 45/3522

Int. Cl. H01l *19/00*

U.S. Cl. 317—235 R 1 Claim

A semiconductor device includes a common substrate, on the one side of which there are provided an insulated gate field effect transistor and bipolar transistor for protecting the former transistor from the failure. The gate of the former is



electrically connected to the emitter of the latter to have the same potential.

3,739,239

SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THE DEVICE

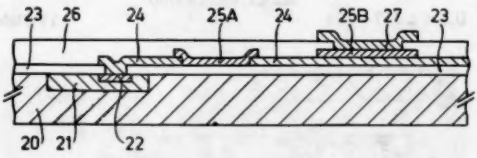
George Kerr, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 4, 1971, Ser. No. 112,625

Claims priority, application Netherlands, Feb. 14, 1970, 7002117

Int. Cl. H01l *5/00*

U.S. Cl. 317—235 R 2 Claims



A semiconductor device having a planar structure, in particular a transistor, having at least an emitter zone which is provided with a series resistance in the form of a resistance layer provided on the surface, the resistance layer being also provided elsewhere on the device for a completely different purpose, where it is entirely covered by a metal layer. Application in particular for protection of the emitter-base junction in washed-out emitters in silicon transistors in which the resistance layer consists of titanium and the metallization consists of alunimium.

3,739,240

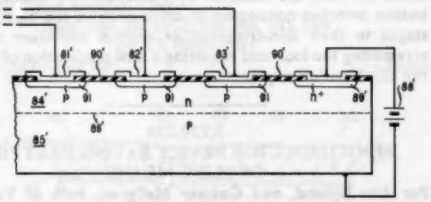
BURIED CHANNEL CHARGE COUPLED DEVICES

Robert Harold Krambeck, South Plainfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Apr. 6, 1971, Ser. No. 131,721

Int. Cl. H01l *11/14*

U.S. Cl. 317—235 R 10 Claims



The specification describes charge coupled devices in which the storage layer is internally charged so that the energy level profile across the thickness of the layer has a maxima in the middle of the layer. Injected carriers can then be stored and

transferred in the bulk region of the semiconductor. If the energy level of the maxima exceeds the surface energy of the valence band by an amount exceeding the Boltzmann expression for thermal excitation, then the stored carriers remain isolated (statistically) from the surface states. The storage layer can be appropriately charged by biasing the layer to remove the mobile carriers. Residual fixed charge bends the energy band if the boundaries are fixed to appropriate barriers. The most convenient structure appears to be a large area p-n junction for the lower (buried) barrier with the usual MIS surface barrier. An MISIM structure is predictably similar. Multichannel structures are proposed such as N-P-N-P-N in which the isolated P-channels serve simultaneously as storage layers. Simultaneous use of both channels with controlled interconnection suggests many potential applications for logic circuits and the availability of convenient crossovers.

3,739,241

ELECTROLUMINESCENT SEMICONDUCTOR DEVICE CONTAINING CURRENT-CONTROLLING RECTIFYING DEVICE

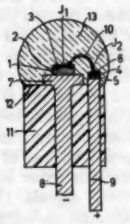
Jacques Claude Thillays, Herouville Saint Clair, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 29, 1972, Ser. No. 230,409

Claims priority, application France, Mar. 1, 1971, 7106973

Int. Cl. H01l *11/00, 15/00*

U.S. Cl. 317—235 R **4 Claims**



An electroluminescent semiconductor device.

An electroluminescent device which is arranged in a partly transparent, protective housing which comprises two connections.

The device is characterized in that it comprises at least two semiconductor crystals of which one crystal shows an electroluminescnet junction and the other shows a rectifying junction. The junctions are connected in series in such manner that during operation of the device all junctions are in the forward direction or all junctions are in the reverse direction.

3,739,242

TRIAC

Alan Foster, Stockport, Cheshire, England, assignor to U.S. Phillips Corporation, New York, N.Y.

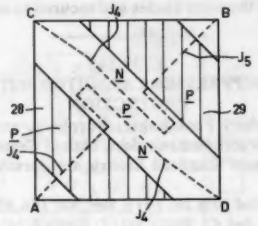
Filed Feb. 15, 1972, Ser. No. 226,461

Claims priority, application Great Britain, Mar. 1, 1971, 5,711/71

Int. Cl. H01l *11/10*

U.S. Cl. 317—235 R **9 Claims**

A five layer triac, having three electrodes, with one electrode covering the whole surface of one side of the wafer, and the other two electrodes being symmetrically located on the other side of the wafer, the two smaller electrodes being



identical so that either may be used as the gate and the other as the second main power electrode.

3,739,243

SEMICONDUCTOR DEVICE FOR PRODUCING OR AMPLIFYING ELECTRIC OSCILLATIONS

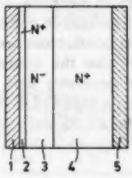
Alain Semichon, Choisy-le-Roi, and Jacques Michel, Ville Luve Saint-Georges, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 99,064, Dec. 17, 1970. This application May 16, 1972, Ser. No. 253,787

Claims priority, application France, Dec. 24, 1969, 6944987

Int. Cl. H01l *9/00*

U.S. Cl. 317—235 R **6 Claims**



An avalanche transit time microwave device as described, employing a Schottky barrier.

3,739,244

VARIABLE CONDENSER

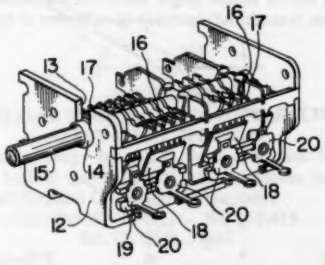
Toshio Tatsumi, Daito; Hideo Kitani, Kobe, and Hideo Maruoka, Higashi, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 26, 1971, Ser. No. 192,185

Claims priority, application Japan, Oct. 30, 1970, 45/108399

Int. Cl. H01g *5/06*

U.S. Cl. 317—253 **3 Claims**



A variable condenser comprising a frame having a cutout formed in one side wall for providing a bearing portion at an

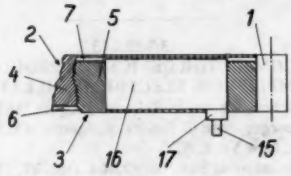
extension thereof, a rotor shaft having a bearing adapted to be received by said bearing portion to support the rotor shaft, said cutout being used to assemble the rotor shaft in the frame, rotor blades secured to the rotor shaft, and stator blades cooperative with the rotor blades and secured to said frame.

3,739,245

WOUND SUPPRESSER CAPACITOR WITH SHOCK PROTECTION

Karlheinz Herbert Fuchshuber, Nurnberg, and Eric Harold Harkness, Grosswelsmannsdorf, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed July 28, 1971, Ser. No. 166,852
Int. Cl. H01g 3/215; H02h 7/16
U.S. Cl. 317—256 **7 Claims**



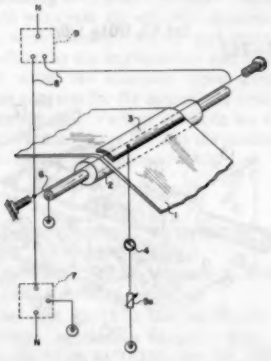
This invention relates to a four pole electrical wound capacitor for suppressing interferring voltages on current conducting lines. Two tapes of a thin dielectric material are each provided on one side with an electrical conducting metal layer for forming electrodes. Two lead-in conductors are connected to each layer, said lead-in conductors not only conducting the interferring current, but also the operating current flowing past the capacitor. The geometry and configuration of the wound capacitor provides a high Q LC filter which eliminates unwanted frequencies. An additional electrode foil with a terminal is in the capacitor to provide shock protection.

3,739,246

PROCESS AND APPARATUS FOR INCREASING THE CHARGE DENSITY OF INSULATORS

Gunter Haas, Wiesbaden-Biebrich, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Dec. 14, 1970, Ser. No. 97,946
Claims priority, application Germany, Dec. 17, 1969, P 19 63 248.5
Int. Cl. H01t 19/00
U.S. Cl. 317—262 A **7 Claims**



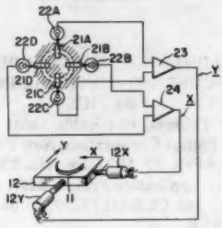
This invention relates to a process and apparatus for increasing the charge density on the surface of a dielectric material in which electrons and gas ions are produced in the gas space above the surface of the material by means of direct current so that the surface is electrostatically charged. The process is an improvement which comprises producing an electric field of the same polarity above the source which generates the electrons and gas ions, whereby the migration of the electrons and gas ions to the surface of the material is directed.

3,739,247

POSITIONING DEVICE USING PHOTOELECTRIC SCANNING

Isao Yamaguchi, and Nori Kato, Machida-shi, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo,

Filed May 10, 1972, Ser. No. 252,020
Claims priority, application Japan, May 17, 1971, 46/33162; Mar. 2, 1972, 47/21802
Int. Cl. G05d 3/00
U.S. Cl. 318—640 **21 Claims**



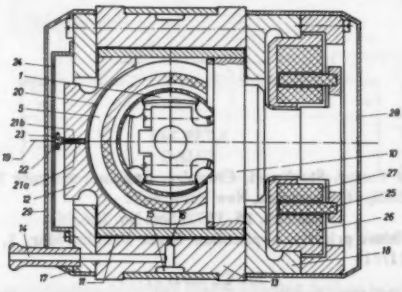
This specification discloses a positioning device for setting an article in a predetermined position. The article to be positioned by the device has a referential pattern of predetermined shape formed on a surface thereof. The positioning device comprises reference pattern carrier means having a reference pattern whose base portion is substantially similar in shape to the referential pattern of the article. Means is provided to move the article in a plane and to a position where the referential pattern on the article and at least the base portion of the reference pattern are optically superposed one upon the other. The two patterns may be optically superposed by optical means. The superposed images of the two patterns are scanned by photoelectric converter means, which converts such images into electrical signals. Detector means is associated with the photoelectric converter means to detect the extent of deviation between the two patterns in accordance with the outputs from the photoelectric converter means.

3,739,248

SELF STARTING ELECTRICAL MOTOR

Heinz Wehde, Heidelberg, Germany, assignor to Teldix GmbH, Heidelberg, Germany

Filed Dec. 13, 1971, Ser. No. 207,292
Claims priority, application Germany, Dec. 12, 1970, P 20 61 391.6
Int. Cl. H02k 29/00
U.S. Cl. 318—138 **17 Claims**



This invention relates to an electrical motor comprising a permanent magnetic rotor, a stator provided with a single

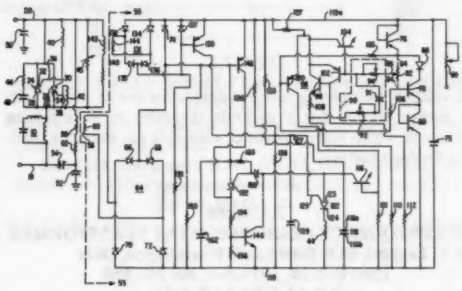
phase operated winding and at least one auxiliary permanent-magnetic pole mounted on the stator for self-starting of said motor in a given direction, and more particularly to an electrical motor which is controlled in starting and running operation.

3,739,249

SPEED CONTROL CIRCUIT FOR A SINGLE PHASE ALTERNATING CURRENT MOTOR

George M. Rosenberry, Jr., Elnora, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 5, 1971, Ser. No. 186,622
Int. Cl. H02p 5/40
U.S. Cl. 318—227 7 Claims



A speed control circuit for a single phase alternating current motor including controllable bidirectional current conducting means gated at a selected phase angle of each half cycle of the alternating current. A timing capacitor, which charges to a first level at a relatively fast rate and then to a higher or critical charge level at a relatively slow rate, generates an electrical pulse when it discharges at the higher level to gate the current conducting means. Although the timing capacitor discharges at the higher charge level, the phase angle of an alternating current half cycle at which it discharges depends upon the level to which it is first charged at the faster rate. This follows since the capacitor would reach the higher charge level at an earlier time in a half cycle if it charged to a higher, rather than a lower, first charge level at the faster rate. Further, after the timing capacitor discharges to gate the current conducting means, a transistor in parallel with the capacitor becomes conductive to prevent the capacitor from recharging to the higher charge level until the next following half cycle of the alternating current. This provision insures a proper timing of the circuit as well as preventing the generation of more than one gating pulse during each half cycle. Finally, since only a single gating pulse is generated each half cycle, means are provided to insure against the attempted gating of a current conducting means that does not have a voltage of proper amplitude applied across it and thereby waste the gating pulse generated for that half cycle of the alternating current.

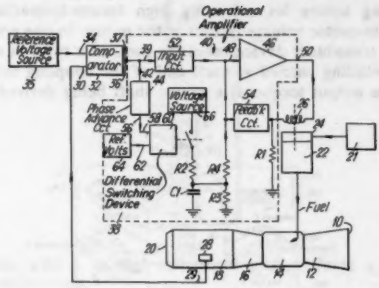
3,739,250

ELECTRONIC RATE MEANS FOR A SERVO DRIVEN FUEL CONTROL

Terence Brockley Beadman, Ashby-de-la-Zouch, England, assignor to Rolls Royce Limited, Derby, England

Filed Sept. 14, 1970, Ser. No. 71,664
Claims priority, application Great Britain, Sept. 18, 1969, 46,015/69
Int. Cl. G05b 11/42
U.S. Cl. 318—610 5 Claims

This invention concerns an electronic control system suitable for controlling jet pipe temperature or rotational speed of a gas turbine engine rotor shaft. The control system is adapted to operate a solenoid which is connected to a valve in the fuel system of the engine to reduce the flow of fuel to the engine



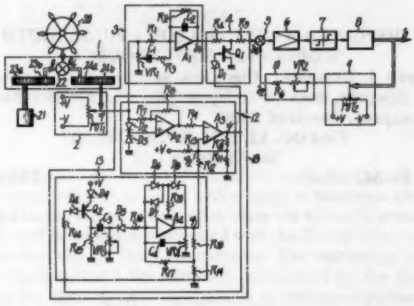
when an electrical output signal from the control system exceeds the value of a reference signal generated by the control system.

3,739,251

MARINE AUTOPILOT SYSTEM

Isao Masuzawa, Tokyo, Japan, assignor to Kabushiki Kaisha Tokyo Keiki (Tokyo Keiki Co., Ltd.), Tokyo, Japan

Filed Mar. 3, 1971, Ser. No. 120,497
Claims priority, application Japan, Mar. 10, 1970, 45/20289
Int. Cl. G05b 5/01
U.S. Cl. 318—611 3 Claims



A marine autopilot system having a circuit for generating a signal corresponding to the deviation of a ship's heading from a set course, a signal limiter circuit for limiting the signal derivered from the circuit, and a control device. In this case, the control device is supplied with the signal from the circuit and automatically control the signal limiter circuit at an optimum value in response to external disturbances exerted on the ship.

3,739,252

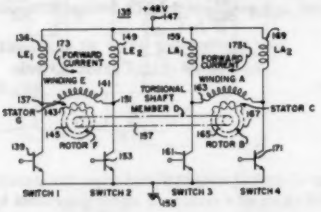
TORSIONAL STEPPING MOTOR AND EXCITER APPARATUS THEREFOR

John D. Hays, Troy; Johnny F. Schauerte, and Harlen L. Baswell, both of Dayton, all of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Oct. 12, 1971, Ser. No. 188,419
Int. Cl. H02k 37/00
U.S. Cl. 318—696 58 Claims

A stepping or indexing motor including plural electrical-to-mechanical energy transducer devices and a torsionally resilient coupling member for connecting transducer device rotor members and for storing rotor member mechanical ener-

gy between rotor member movements; the torsionally resilient coupling member also providing starting torque for the stepping motor, and a means for driving separately the inertia component and the friction component of the stepping motor load; and the torsionally resilient coupling member also providing means for achieving high torque-to-inertia and torque-to-motor volume rations in the motor. In one embodiment a transducer device takes the form of a rotor, a stator, and a winding carried at each end of the coupling member with the output torque at a motor shaft being derived both



from an adjacent transducer device and from energy stored in the torsionally resilient coupling member during alternate sequential energizing and deenergizing of transducer windings, such alternate sequential energizing and deenergizing action subjecting the coupling member to a twisting action and a relaxing action during each step of operation. Electrical circuitry for controlling the flow of energy into the stepping motor and for removing energy from the motor magnetic circuit is also described along with a method for achieving a novel energy conserving release of rotor and stator meagnetic engagement.

3,739,253

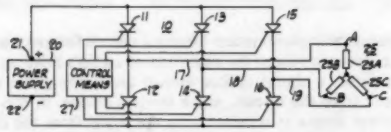
DISPLACED WAVEFORM FOR A PULSE WIDTH MODULATED POWER SOURCE

Andrew J. Humphrey, Cleveland, and Dennis L. Szymanski, Willoughby, both of Ohio, assignors to Reliance Electric Company, Cleveland, Ohio

Filed Oct. 12, 1971, Ser. No. 188,037

Int. Cl. H02m *1/12*

U.S. Cl. 321—9 A **23 Claims**



A pulse width modulated power source is disclosed capable of producing a displaced waveform which has a fixed RMS value and a variable ratio of fundamental to harmonic component. The displaced waveform has reduced harmonics which produce a higher fundamental component than was found in the prior art modulated waveforms. The displaced waveform is suitable for use as an intermediate waveform between a modulated and an unmodulated six-step waveform to overcome surges experienced in the transition therebetween. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,739,254

VOLTAGE MULTIPLYING RECTIFIER DEVICE

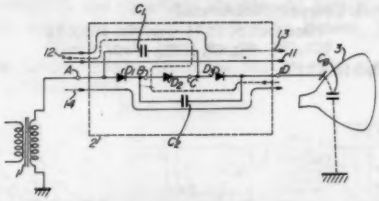
Isao Kojima; Tetsuya Takahashi; Takeshi Sasaki, and Tatuwo Yosimura, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 21, 1971, Ser. No. 210,527

Claims priority, application Japan, Dec. 29, 1970, 45/128560

Int. Cl. H02m *7/00*

U.S. Cl. 321—15 **16 Claims**



A voltage multiplying rectifier device for use as a high voltage power supply for a cathode-ray tube in a television receiver in which silicon rectifier elements are used for rectifying the high voltage.

3,739,255

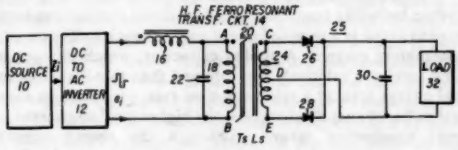
HIGH FREQUENCY FERRORESONANT TRANSFORMER

Dale V. Leppert, 6535 Estel Road, Worthington, Ohio

Filed Dec. 16, 1971, Ser. No. 208,880

Int. Cl. G05f *3/08*, *1/32*

U.S. Cl. 321—16 **19 Claims**



A high frequency ferroresonant regulator circuit having a saturable core structure comprised of a first core of a square loop magnetic material and a second core; the first core having a first permeability region which provides low reluctance to the flux generated during the initial part of the period between resonant pulses of the ferroresonant circuit, and a second permeability region of different values upon saturation; the second core having a permeability which is less than the first permeability of the first core and which is greater than the second permeability of the first core, and which is of a value which does not saturate at the values of mmf provided by the ferroresonant circuit; which structure increases the width and decreases the amplitude of the resonant pulse provided by the ferroresonant transformer therein during the resonant period to provide increased circuit efficiency and more stable operation at all values of output load.

3,739,256

TRANSFER SWITCHING SYSTEM FOR REGULATING TRANSFORMERS INCLUDING THYRISTOR NETWORK AND LOGIC CONTROLS THEREFOR

Manfred Matzl, Eberbach/Neckar, Germany, assignor to Maschinenfabrik Reinhausen Gebruder Scheubeck K.G., Regensburg, Germany

Filed Jan. 21, 1972, Ser. No. 219,705

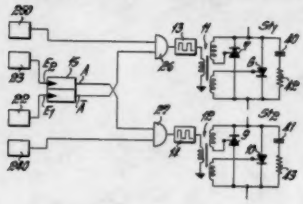
Claims priority, application Germany, Jan. 29, 1971, P 21 04 076.6

Int. Cl. G05f *1/20*; H02m *5/12*

U.S. Cl. 323—43.5 S **3 Claims**

A system for performing tap-changing operations on tapped regulatir g transformers by thyristor networks and disconnect

contact means. The trigger pulse generators for the thyristors of the networks are controlled by sensors whose output is fed



into a logic circuitry. The latter includes a bistable device and a pair of AND-gates.

3,739,257

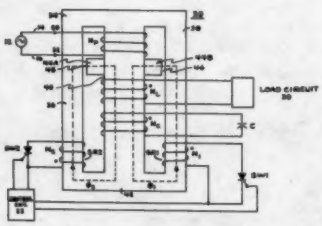
VARIABLE FLUX-RESET FERRORESONANT VOLTAGE REGULATOR

Patrick L. Hunter, Columbus, Ohio, assignor to North Electric Company, Galion, Ohio

Continuation-in-part of Ser. No. 96,380, Dec. 9, 1970, abandoned. This application Sept. 29, 1971, Ser. No. 184,763

Int. Cl. G05f 1/38, 1/64

U.S. Cl. 323—50 22 Claims



A thyristor controlled ferroresonant voltage regulator circuit in which the output voltage is made adjustable by varying the reset flux level of each of two parallel magnetic core paths upon which the load windings are wound. One magnetic core path is driven hard into magnetic saturation during one half cycle of the output waveform, and the second magnetic core path is clamped at a given value; in the second half cycle the second path is driven into magnetic saturation and the one path is clamped at the given value. The level of clamping is determined by an associated control circuit which may comprise a simple manually adjustable potential source, or a circuit with load sensing and automatic feedback capabilities.

3,739,258

METHOD AND APPARATUS FOR DETECTING AND SIZING MICROSCOPIC PARTICLES

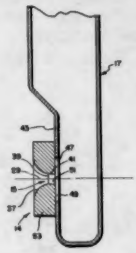
Richard F. Karuhn, Chicago; Reg Davies, Justice, and John Michael Clinch, Chicago, all of Ill., assignors to IIT Research Institute, Chicago, Ill.

Filed Aug. 20, 1971, Ser. No. 173,372

Int. Cl. G01n 27/00

U.S. Cl. 324—71 CP 5 Claims

Improved accuracy of size measurement and size distribution of particles in a fluid have been obtained in an electrical zone sensing apparatus by a flow control director means which directs the fluid in a more streamlined, less turbulent flow through an aperture at which the particles are electrically sensed. Also, the particles were directed and guided to flow substantially parallel to longitudinal axis for the aperture. The preferred flow control detector means comprises a contoured orifice having a smooth tapered inlet wall blended at an inter-



section with a central cylindrical wall defining a tubular shaped aperture.

3,739,259

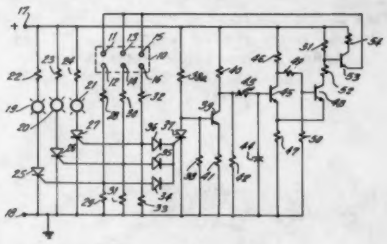
POLE SYNCHRONIZATION TEST APPARATUS FOR MULTI-POLE CIRCUIT BREAKERS

William E. May, Croydon, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Oct. 22, 1971, Ser. No. 191,937

Int. Cl. G01n 31/00

U.S. Cl. 324—28 CB 11 Claims



A test circuit provides a thyristor for each pole of a multipole circuit breaker in series with a lamp. A transistor circuit starts a timing circuit in operation when the first pole contacts touch, and the thyristor associated with this first pole becomes conductive and its lamp is energized. The remaining poles must touch within a time interval determined by the timing circuit for their respective thyristor to become conductive, and for their respective indicating lamps to be energized.

3,739,260

METHOD FOR OPERATING A HALOGEN DETECTION DIODE AND ARRANGEMENT FOR CARRYING OUT THE METHOD

Walter Schadler, Triesen, Liechtenstein, assignor to Balzers Patent-Und Beteiligungs-Aktiengesellschaft, Balzers, Furstentum, Liechtenstein

Filed June 23, 1971, Ser. No. 155,901

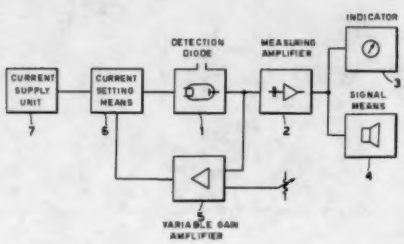
Claims priority, application Switzerland, June 30, 1970, 9943/70

Int. Cl. G01n 27/00

U.S. Cl. 324—33 7 Claims

In a method of operating a halogen detection diode having a filament-heated anode, which emits ions when impacted by halogen gas, and a cathode, fundamental ion current variations of the diode are constantly sensed and the filament heating current is regulated in accordance with the sensed ion current variations to counteract the ion current variations to maintain the fundamental ion current substantially constant. The ion current peak, which occurs under the action of an halogenous gas on the anode of the diode, is measured and

serves as an indication of the halogen action. The arrangement for effecting the method includes a measuring amplifier connected to the cathode of the detection diode, an indicating meter and preferably an alarm device connected to the output of the measuring amplifier, a current supply for the filament and an adjusting means connecting the current supply to the filament. A variable gain amplifier is connected to the cathode of the detection diode and to the setting means to regulate the filament heating current in a corrective sense in accordance with sensed fundamental ion current variations. The arrangement and method are used primarily for checking leakage of an atmosphere containing an halogenous gas.

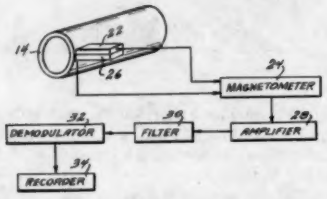


3,739,261

METHOD FOR MEASURING THE AMOUNT OF COLD WORKING IN A STAINLESS STEEL SAMPLE

Claus J. Renken, Jr., Holts Summit, Mo., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed June 28, 1971, Ser. No. 157,139
Int. Cl. G01r 33/12
U.S. Cl. 324—34 R **4 Claims**



The amount of cold working in a stainless steel sample is determined by magnetizing the stainless steel sample in a predetermined direction and mounting a magnetic-field-sensing apparatus in magnetic coupled relationship with the stainless steel sample. The stainless steel sample is then moved relative to the magnetic-field-sensing apparatus to modulate the magnetic coupling therebetween responsive to the relative motion and provide magnetic-field scanning of the sample. The signal sensed by the magnetic-field-sensing apparatus is filtered to pass only the modulation frequency of the magnetic coupling, which filtered sensed magnetic-field signal provides a measure of cold working in the stainless steel sample.

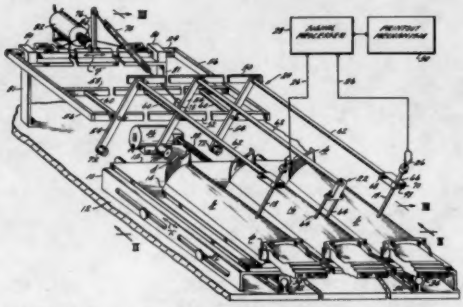
3,739,262

INSPECTION MACHINE USING A MASTER AND FOLLOWER TO GUIDE A PROBE AT A PREDETERMINED ANGLE RELATIVE TO A TEST PIECE

Harold L. Seekins, Cincinnati, Ohio, assignor to General Electric Company, Lynn, Mass.

Filed Sept. 20, 1971, Ser. No. 182,025
Int. Cl. G01r 33/12
U.S. Cl. 324—40 **11 Claims**

An eddy current inspection machine comprises a blade master and a plurality of blade holders mounted in side-by-side relation on a carriage which reciprocates in a horizontal *x* direction. Probes and a follower are mounted on a parallel linkage mechanism which is pivotally mounted on a slide which is incrementally advanced in a horizontal *y* direction. The follower engages the master and controls the angular setting of the parallel linkage mechanism to position the probes normal to the surfaces of blades positioned by the holders. Read-out means, connected to the probes, identify imperfection as the probes traverse the surfaces of the workpieces.

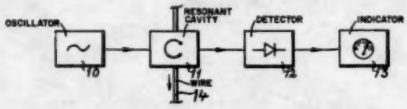


3,739,263

CROSS-SECTIONAL AREA MEASURING DEVICE

Bengt Henoch, Alvsjo, Sweden, assignor to Institutet for Mikrovagsteknik, Stockholm, Sweden

Filed Sept. 27, 1971, Ser. No. 183,946
Claims priority, application Sweden, Sept. 30, 1970, 13233/70
Int. Cl. G01r 27/04
U.S. Cl. 324—58.5 C **8 Claims**



A device for measuring the cross-sectional area of an object such as a wire includes a resonant cavity through which the object passes. The resonant cavity is energized by a signal whose frequency periodically varies over a range which includes two distinct resonant modes of the cavity. By virtue of the passage of the object through the cavity both resonance frequencies change as a function of the cross-section of the object and the difference between these two resonance frequencies is a measure of the cross-section of the object.

3,739,264

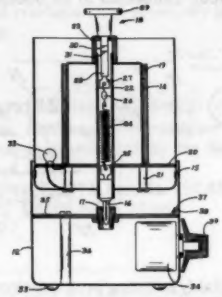
GRAIN MOISTURE TESTER

Roy E. Resh, Bettendorf, Iowa, assignor to Agridustrial Electronics, Inc., Bettendorf, Iowa

Filed June 11, 1971, Ser. No. 152,186
Int. Cl. G01r 27/26
U.S. Cl. 324—61 R **13 Claims**

To provide a lightweight, portable tester, the bottom of an upper cylindrical aluminum container that is the housing for a test cell fits tightly into a lower cylindrical aluminum container that is a base and chassis for electrical circuits that measure permittivity. The upper container has a coaxial cylindrical inner electrode in which a spring scale is mounted, and since the tester is lightweight, the scale is used to measure a sample by weighing the sample along with the entire tester. Polystyrene foam surrounding the inner electrode distributes the sample quite evenly as it is poured into the cell and spaces

the grain from the inner electrode to prevent points of concentration of electric field. To compensate for change in permittivity resulting from change in temperature of the sample, a



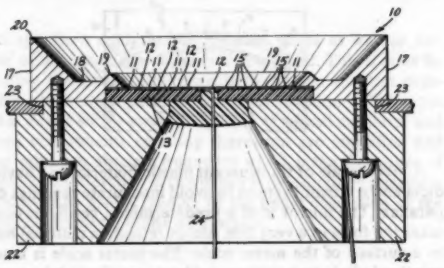
temperature-sensing capacitor is mounted within the cell. A disabling circuit connected to a light-emitting-diode indicator provides a warning that the voltage of a battery is too low to provide reliable readings.

3,739,265

TEST INSTRUMENT AND METHOD FOR ISOLATING AND MEASURING THE CAPACITANCE DUE TO A PARTICULAR FUNCTIONAL GROUP IN A LIQUID

John D. Skildum, 34 N. Oaks Road, St. Paul, Minn.

Filed Sept. 9, 1970, Ser. No. 70,815
Int. Cl. G01r 27/26
U.S. Cl. 324—61 R 13 Claims



A sensor with a planar surface formed by two spaced apart electrodes and a low capacitance insulating material therebetween, adapted to receive a liquid to be tested thereon and electrically connected in one leg of a bridge circuit so that the capacitance of the sensor and liquid to be tested can be compared to the capacitance of the sensor and a standard liquid. The capacitance of liquids, such as ois and the like, varies with the oxidation thereof.

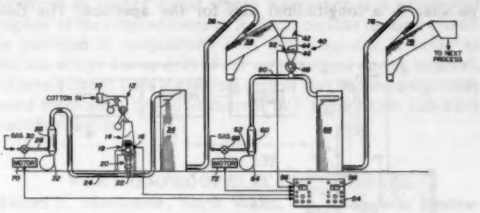
3,739,266

SYSTEM FOR SENSING VARIATIONS IN THE DIELECTRIC CONSTANT OF A FLOW OF MATERIAL

Joseph C. Neitzel, Denton, Tex., and Robert C. Strandberg, Greensboro, N.C., assignors to Hardwicke-Etter Company, Sherman, Tex., and Strandberg Engineering Laboratories, Inc., Greensboro, N.C., part interest to each

Filed Nov. 18, 1970, Ser. No. 90,604
Int. Cl. G01r 27/26; G01n 1/00
U.S. Cl. 324—61 R 9 Claims

The specification discloses a system for detecting the moisture content of a flow of material such as seed cotton. The system includes capacitor plates for sensing variations in the dielectric constant of the flow of material past the plates. An oscillator generates an electrical signal having a frequency proportional to the dielectric constant and circuitry is responsive to the electrical signal for generating a direct current output control signal representative of the moisture content of the flow of material. The control signal controls the tempera-



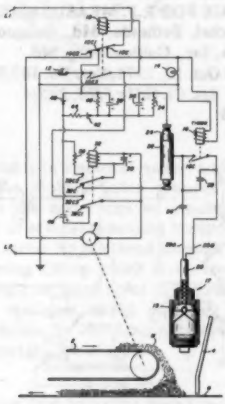
ture of a dryer system in dependency upon the average dielectric constant detected by the capacitor plates.

3,739,267

APPARATUS FOR DETECTING CONDUCTIVE MATERIAL UTILIZING A VAPOR LAMP

Victor R. Bart, East Gary, Ind., assignor to United States Steel Corporation

Filed May 2, 1972, Ser. No. 249,593
Int. Cl. G01n 27/00
U.S. Cl. 324—71 R 6 Claims



Apparatus for detecting conductive material, particularly a build-up at the end of a conveyor, includes a vapor lamp, an electrically conductive means around at least a portion of the lamp periphery, an AC power source, a biasing circuit for supplying a high potential DC charge to said lamp, and a probe. The probe includes a conductor adapted to contact the material and two insulated conductor leads connected to the electrically conductive means. One end of the first lead is connected to the detector conductor and the adjacent end of the second lead is insulated from the detector conductor and the first lead. A capacitor is connected in each lead. A timer relay contact is connected in parallel with the capacitor in the first lead. When conductive material is detected, the vapor lamp conducts and a circuit stops movement of the conveyor.

3,739,268

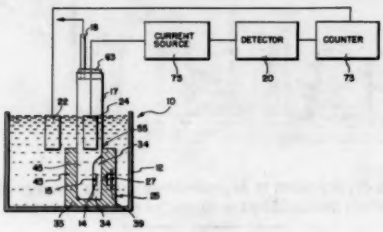
PARTICLE SENSING APPARATUS, METHOD AND FLOW DIRECTION COLLAR THEREFOR

Richard F. Karuhn, Chicago; Reg Davies, Justice, both of Ill., and Brian Howard Kaye, Sudbury, Ontario, Canada, assignors to IIT Research Institute, Chicago, Ill.

Filed Aug. 20, 1971, Ser. No. 173,575
Int. Cl. G01n 27/00
U.S. Cl. 324—71 CP 11 Claims

A flow direction collar is positionable in an electrical zone sensing apparatus with an elongated bore therein disposed in

substantial alignment with an aperture through which particles carried by a liquid pass while being electrically sensed. The collar is positioned immediately upstream of the aperture to cause a directional flow of the liquid along a path substantially parallel to a longitudinal axis for the aperture. The flow



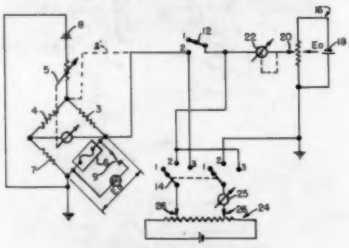
through the collar directs the particles to flow along paths substantially parallel to the aperture axis thereby reducing the turbulence about the particle created by abrupt changes in velocity. Preferably, the collar includes a housing for telescoping on the bottom of a detection tube.

3,739,269

PRECISION SELF-CONTAINED D.C. SUBSTITUTION BRIDGE FOR R.F. MEASUREMENTS

Bruno O. Weinschel, Bethesda, Md., assignor to Weinschel Engineering Co., Inc., Gaithersburg, Md.

Filed Oct. 12, 1971, Ser. No. 187,962
Int. Cl. G01r *5/26, 21/04*
U.S. Cl. 324—106 **7 Claims**



An improvement is described over the system of U.S. Pat. No. 3,142,017 which shows a substitution bridge circuit using d.c. for measuring ultra-high frequency values and particularly power, but requires an expensive external d.c. voltage measuring device such as a precision potentiometer or a digital voltmeter with an accuracy of 10 microvolts for a 1 volt range. The improved system described herein makes essentially the same measurement but uses an inexpensive memory circuit for remembering a voltage and uses the internal calibrated voltage divider shown in the above patent to obtain the same result without requiring the expensive external d.c. voltage measuring device.

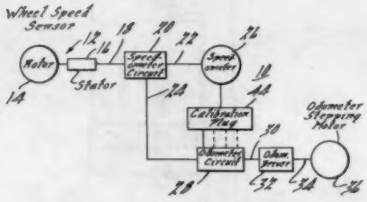
3,739,270

ELECTRONIC SPEEDOMETER/ODOMETER WITH INTERCHANGEABLE CALIBRATING MEANS FOR ACCOMMODATING A PLURALITY OF VEHICLE TIRE SIZES

Roger L. Miller, Ann Arbor, and Robert S. Podlewski, Jackson, both of Mich., assignors to Kelsey Hayes Company, Romulus, Mich.

Filed Feb. 1, 1971, Ser. No. 111,399
Int. Cl. G01p *3/54*
U.S. Cl. 324—166 **18 Claims**

This invention relates to an electronic speedometer/odometer responsive to pulses from a wheel speed sensor which may include a speedometer circuit and an ammeter for indicating speed with provision for interchangeably inserting calibrating resistors in the meter circuit for establishing a meter response in accordance with the vehicle tire size, and an odometer programmable circuit connected to an odometer with provision



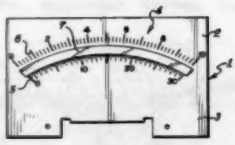
for interchangeably inserting program circuits for establishing the response of the odometer selected in accordance with the vehicle tire size. Preferably, the meter calibration resistor and the odometer program circuit are mounted in a single interchangeable unit.

3,739,271

MIRRORED METER SCALE AND METHOD OF MANUFACTURE

Percy A. Wetzel, Florham Park, N.J., assignor to Weston Instruments, Inc., Newark, N.J.

Filed July 26, 1971, Ser. No. 165,918
Int. Cl. G01r *1/08;* **G02b** *5/08*
U.S. Cl. 324—76 R **7 Claims**



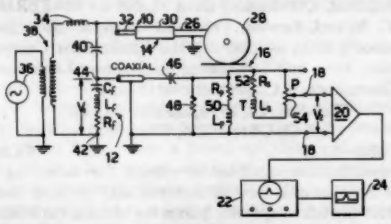
A meter scale of transluscent plastic material and having indicia and a mirror thereon to avoid inaccurate readings due to parallax. The mirror is of a predetermined configuration and takes the form of a very thin film of reflective material bonded to a surface of the meter scale. The meter scale is made by printing indicia on a surface and heat transferring the very thin film mirror to a surface of the scale.

3,739,272

FILTER CIRCUIT FOR CORONA DETECTION

Alexander L. McKean, Ardsley, N.Y., assignor to Phelps Dodge Cooper Products Corporation, New York, N.Y.

Filed July 9, 1971, Ser. No. 161,190
Int. Cl. G01r *31/02, 31/12*
U.S. Cl. 324—54 **8 Claims**



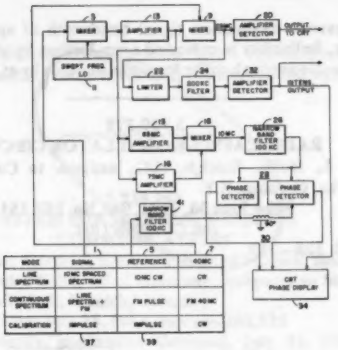
A filter network for providing essentially optimum resolution of pulse response in the detection of high frequency corona discharge, including a high pass filter for removing the

low frequency power line signal and its harmonics, and a low pass lossy transformer which introduces a low frequency bucking voltage in a subsequent stage of detection to balance out any residual low frequency signals still present, thereby providing improved resolution and sensitivity in the detection of corona discharge.

3,739,273
SPECTRUM ANALYZER

John W. Taylor, Jr., Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 2, 1971, Ser. No. 195,885
Int. Cl. G01r *23/16*
U.S. Cl. 324—77 C **4 Claims**

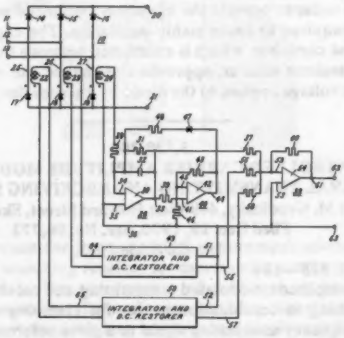


This spectrum analyzer will measure phase as well as amplitude of the spectral components of a signal. This is done by measuring the phase difference between the spectral components which are separated by a fixed frequency. The input signal is mixed with a swept frequency of a local oscillator and the two components resulting therefrom are amplified and further mixed to obtain a frequency which is the difference of the two. This difference in frequency is measured by phase detectors so as to give a reading of the phase dispersion of the spectral components of the input signal.

3,739,274
DIRECT CURRENT MEASURING SYSTEM

Robert P. DePuy, Cherry Hill, N.J., assignor to General Electric Company, Philadelphia, Pa.

Filed July 29, 1971, Ser. No. 167,406
Int. Cl. G01r *1/22, 1/02*
U.S. Cl. 324—120 **7 Claims**

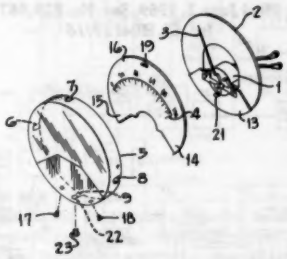


A current measuring system for use in a direct current electrical system wherein the magnitude of direct current is periodically reduced to zero. A sensor or pick up device generates a signal proportional to the time rate of change of current, and this signal is integrated in an integrator to produce an output signal whose waveshape is a substantial replica of the original current. A direct current restorer circuit is provided in conjunction with the integrator in order to reduce errors due to drift of the output signal during intervals of zero current. This measuring system may be advantageously used to monitor the total current in a three-phase full-wave rectifier circuit.

3,739,275
WEATHERPROOF ELECTRICAL METER

Elbert K. Mackenzie, North Wales, Pa., assignor to Electro-Mechanical Instrument Co., Inc., Perkasie, Pa.

Division of Ser. No. 832,924, June 3, 1969, Pat. No. 3,638,119.
This application June 28, 1971, Ser. No. 157,441
Int. Cl. G01r *1/04*
U.S. Cl. 324—156 **6 Claims**

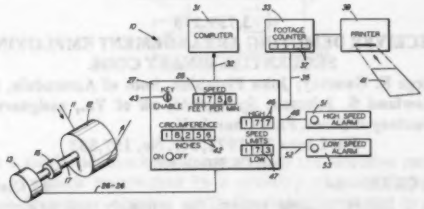


In an industrial type electrical meter, a transparent molded plastic bezel has molded index grooves in the periphery thereof so that the meter can be mounted in an indexed bracket in one of several mounting positions without use of tools. The The meter leads extend through an independently attached mounting fitting which is secured to the case by screws extending into blind holes in the case. The meter has spring-loaded, insulated shield encased, hand assembled, polarized connectors for connecting the meter into an electrical circuit without the use of tools.

3,739,276
METHOD OF AND SYSTEM FOR MEASURING THE SPEED AND LENGTH OF A MOVING ELONGATED ARTICLE

George C. Dornberger, Phoenix, Ariz., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed June 29, 1971, Ser. No. 157,863
Int. Cl. G01p *3/56*
U.S. Cl. 324—161 **7 Claims**



A system for measuring the speed and length of a moving elongated article, such as a moving wire exiting from an insulating process, includes a roller of precisely measured circumference in frictional contact with the wire, a transducer for generating a precise number of pulses in response to each revolution of the roller and a counting unit for receiving the generated pulses. The circumference of the roller is preset into the counting unit to control a pulse multiplying circuit

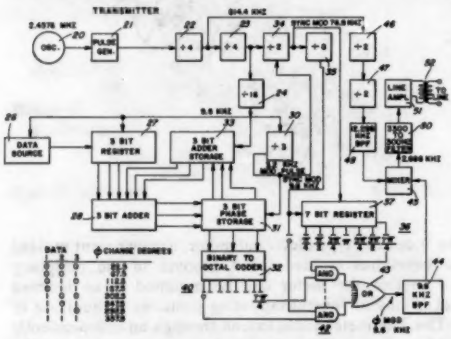
and a time period during which the pulses are counted. The counted pulses are divided down to render one pulse for each foot of wire moved past the roller and are coupled to a footage counter to indicate the length of wire which may be taken up on a strand take-up apparatus. The transducer pulses may be counted for the variable time period and displayed directly as the foot per minute speed of the wire. Additionally, preset high and low speed tolerance limits may be compared to the measured speed of the wire to activate alarm circuitry for measured speeds falling without the limits. The system may be interfaced with a computer to monitor or control the insulating process.

3,739,277

DIGITAL DATA TRANSMISSION SYSTEM UTILIZING PHASE SHIFT KEYING

Robert J. Schneider, Mount Prospect, and William I. Levy, Wheeling, both of Ill., assignors to The Hallicrafters Co., Rolling Meadows, Ill.

Filed June 2, 1969, Ser. No. 829,567
Int. Cl. H04l 27/18
U.S. Cl. 325—30 20 Claims



A digital data transmission system utilizing differential phase shift keying. In the transmitter serial data bits are grouped and the carrier wave is phase shifted by an angle determined from a comparison of successive data groups. In the receiver the successive phase shifts are detected by comparing the received signal in digital form with a digital reference, at a plurality of points in each cycle. When several matches are obtained for one phase, that phase is accepted as the phase of the received signal. The difference between the phases of successive portions of the received signal is utilized to reconstitute the transmitted data. Changes in polarity of the received signal are compared with the local reference signal to generate a control for the reference.

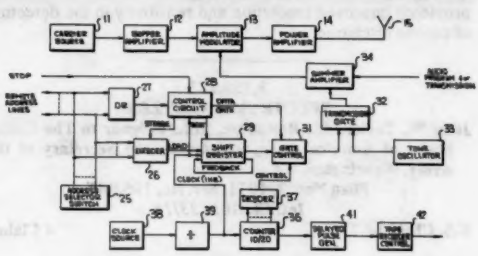
3,739,278

RECEIVER DEMUTING ARRANGEMENT EMPLOYING SEQUENTIAL BINARY CODE

George E. Gautney; John Piombino, both of Annandale, and Rowland S. Johnson, Springfield, all of Va., assignors to Gautney & Jones, Falls Church, Va.

Filed June 29, 1971, Ser. No. 157,833
Int. Cl. H04b 1/00
U.S. Cl. 325—64 17 Claims

In a highly reliable system for remotely and selectively demuting one or more of multiple receivers, an arrangement employing a sequential binary code wherein a transmitted carrier is selectively modulated or not in each of plural successive time frames throughout a multi-frame coding interval, each interval being bracketed by start and stop frames in which the carrier must be modulated. Remote receivers include decoding circuits arranged to recognize reception of one or more code combinations. Upon recognizing one of its assigned code combinations the decoding circuit demutes the receiver to render audible whatever program information appears on the carrier. Extremely high reliability is achieved by employing relatively long time frames of approximately 1 second and a very narrow modulation signal bandwidth of approximately 1.4 Hz. Reliability is extended even further by utilizing code combinations which differ from one another by at least 2 bits.

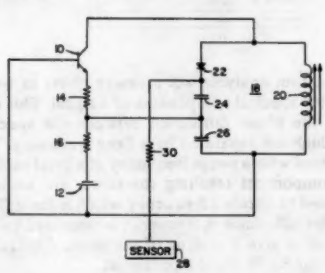


3,739,279

RADIO CAPSULE OSCILLATOR CIRCUIT

David L. Hollis, Raleigh, N.C., assignor to Corning Glass Works, Corning, N.Y.

Filed June 30, 1971, Ser. No. 158,251
Int. Cl. H04b 1/04
U.S. Cl. 325—113 10 Claims



This invention relates to a Colpitts oscillator circuit for a radio capsule of the type adapted to be swallowed by a patient for investigating a condition of the gastrointestinal tract. The circuit includes a transistor as the active element and a parallel resonant LC circuit including the series combination of a variable capacitance diode and first and second capacitors, the capacitance of the second capacitor being the larger of the two in order to provide the minimum amount of positive feedback required to cause stable oscillation. The capacitance of the first capacitor, which is connected between the diode and the transistor emitter, approximates that of the diode at the lowest voltage applied to the diode by a sensor device.

3,739,280

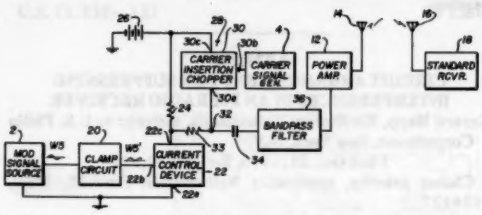
CONTROLLED CARRIER AMPLITUDE MODULATED SIGNAL TRANSMITTING AND RECEIVING SYSTEM

Robert M. Grodinsky, 448 West Howard Street, Skokie, Ill.

Filed Dec. 10, 1970, Ser. No. 96,772
Int. Cl. H03c 1/62
U.S. Cl. 325—144 6 Claims

An amplitude modulated transmitting and receiving system comprising in combination means for clamping a relatively low frequency modulating signal to a given reference level, so the clamped signal does not vary in polarity, means for chopping the clamped signal between a reference potential at or near said reference level and the instantaneous value of the

clamped signal, and filter means for filtering D.C. and modulating signal frequencies from the chopped signal. The filtered signal is transmitted by an antenna and a conventional amplitude modulation receiver receives the transmitted signal.



3,739,281

SYSTEM FOR JAMMING WIRELESS COMMUNICATIONS

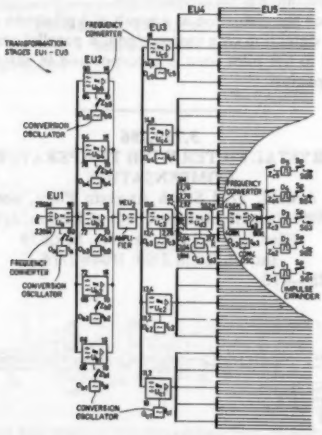
Peter Deserno; Friedrich Kauderer, both of Munich, and Hans Prost, Munich-Solln, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed July 25, 1963, Ser. No. 298,525

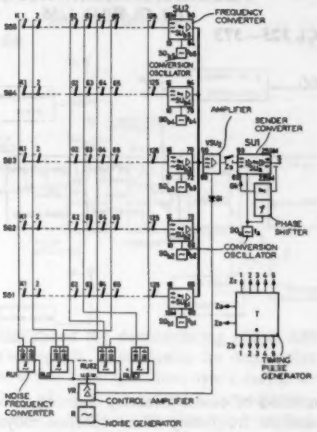
Claims priority, application Germany, July 31, 1962, S 80666

Int. Cl. H04k *3/00*

U.S. Cl. 325—132 **17 Claims**



1. In a system for jamming wireless communications with the aid of a searching receiver for ascertaining senders which are engaged in the transmission of messages, a powerful jamming transmitter for radiating jamming signals on the waves of ascertained senders, whereby said receiver and transmitter are alternately operative to ascertain transmitting senders and to transmit jamming signals, respectively, which comprises means at the searching receiver for converting received frequency signals into lower frequency ranges, means for successively converting said lower frequency range signals into a plurality of individual ranges, mans forming a group of frequency-analyzing channels, means for connecting said frequency-analyzing channel means to respective outputs of said plurality of individual ranges, whereby each individual range is searched for frequencies therein by the common group of frequency-analyzing channels, means operatively connected to said frequency-analyzing channel means responsive upon ascertainment of a signal thereby, to effect jamming transmission corresponding to the received frequency of such ascertained signal.



3,739,282

RADIO RECEIVER FOR SINGLE SIDEBAND RECEPTION

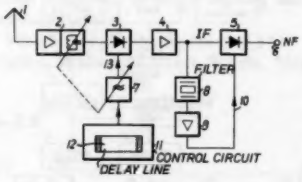
Walter Bruch, and Werner Scholz, Hannover, Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Dec. 10, 1970, Ser. No. 96,901

Claims priority, application Germany, Dec. 11, 1969, P 19 62 156.8

Int. Cl. H04b *1/68*

U.S. Cl. 325—330 **11 Claims**

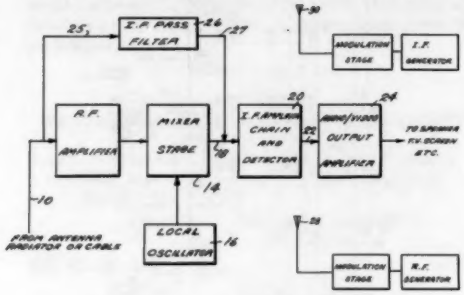


In a single sideband radio receiver for the selective reception of signals transmitted by a plurality of transmitters at equal frequency spacing (Δf_s) the local oscillator in the receiver, which may produce voltages for either heterodyning or demodulating the received signal, is controlled by means of an arrangement including an ultrasonic delay line which serves as the frequency standard for the spacing of the local oscillator frequencies (Δf_o) so that it locks in and oscillates only at defined oscillator frequencies corresponding to the frequencies of the transmitters. Various alternative embodiments of controlling the local oscillator in this manner are disclosed.

3,739,283
METHOD OF COMMUNICATING WARNING INFORMATION VIA THE INTERMEDIATE FREQUENCY OF A SUPERHETERODYNE RADIO AND/OR TELEVISION RECEIVER

Francis S. Colligan, 5200 Oakland Road, Chevy Chase, Md.

Filed Dec. 2, 1971, Ser. No. 204,012
Int. Cl. H04b 1/16
U.S. Cl. 325—373 9 Claims

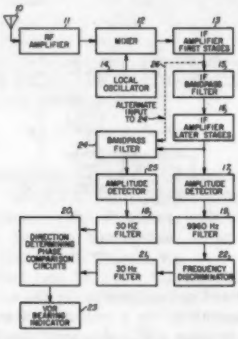


A method of communicating warning information via the intermediate frequency of a superheterodyne radio and/or television receiver. A separate intermediate frequency signal bearing warning information, such as a tone, is transmitted and is received at a receiver simultaneously with reception of a conventionally modulated carrier signal. The separate intermediate frequency signal bypasses the mixer and the local oscillator of the receiver and is fed directly into the intermediate frequency amplifier of the receiver and through the intermediate frequency detector to provide the warning information in audio or visual form for the radio or television user.

3,739,284
VOR RECEIVER IMMUNE TO FALSE BEARING INDICATION STEMMING FROM ADJACENT CHANNEL MODULATION COMPONENTS

Harris A. Stover, Cedar Rapids, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa

Filed Oct. 14, 1971, Ser. No. 189,417
Int. Cl. H04b 1/20; G01s 1/50
U.S. Cl. 325—468 9 Claims

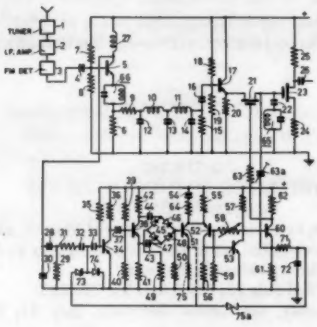


An improved variable omnirange (VOR) receiver is described. Troublesome FM to AM conversion in the receiver selectivity defining IF bandpass filter of adjacent channel 9960 Hz subcarrier modulation components, which combine with the normal 30 Hz carrier amplitude modulation component and destroy the true phase thereof, is prevented from developing false VOR bearing indications by the inclusion of a further narrow band IF bandpass filter through which the IF signal is separately passed to an additional AM detector to develop the true 30 Hz AM component. The 30 Hz subcarrier FM component is demodulated in the normal manner. The reference and variable phase 30 Hz modulation components then exhibit a relative phase which is truly indicative of VOR bearing.

3,739,285
CIRCUIT ARRANGEMENT FOR SUPPRESSING INTERFERENCES IN AN FM RADIO RECEIVER

Gerard Hepp, Eindhoven, Netherlands, assignor to U.S. Philip Corporation, New York, N.Y.

Filed Oct. 21, 1970, Ser. No. 82,611
Claims priority, application Netherlands, Oct. 25, 1969, 6916127
Int. Cl. H04b 1/10
U.S. Cl. 325—473 5 Claims



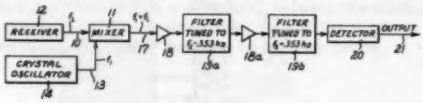
A circuit arrangement for interference suppression in which the signal is applied through a gating circuit which is blocked during interference to a storage capacitor whose voltage remains constant during interference.

To reduce the distortion as a result of a pilottone serving for the stereo detection of a stereo signal a parallel resonant circuit tuned to the pilot tone is incorporated in series with the storage capacitor.

3,739,286
CRYSTAL FILTER WITH TEMPERATURE COMPENSATION

James G. Arnold, 1724 South Augusta Place, and Loyd D. Myers, 8401 East Hayne Place, both of Tucson, Ariz.

Filed July 6, 1971, Ser. No. 159,975
Int. Cl. H03b 3/04; H04b 1/16
U.S. Cl. 325—416 5 Claims



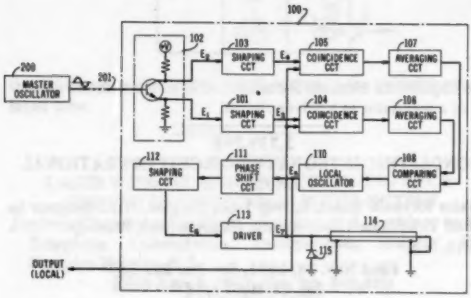
A narrow band transmission system using a crystal filter having a pass band width in the order of one hertz and operable over an ambient temperature range of 60° C. The output of a crystal controlled oscillator is mixed with the incoming signal to provide a sum signal as the input to the filter. The oscillator and filter crystals have matched temperature characteristics so that the oscillator frequency and the filter center frequency vary in the same amount with change in temperature.

3,739,287

PHASE DIFFERENCE DETECTION CIRCUIT

Stanley Jerome Johnson, North Aurora, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 15, 1971, Ser. No. 198,867
Int. Cl. H03b 3/04
U.S. Cl. 218—133 11 Claims



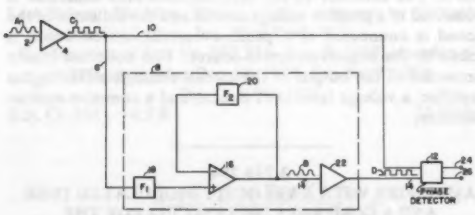
A circuit for synchronizing a local sine wave oscillator to a master oscillator is disclosed. A strobe pulse is derived during each cycle period of the locally generated sine wave in such a manner that the strobe pulse is centered about the midpoint of the cycle period. The phase difference between the two waves is measured by a comparison of the coincidence of each strobe pulse with the positive portion of the master wave and with the positive portion of the master wave delayed by 180°.

3,739,288

DEMODULATING CIRCUIT EMPLOYING PHASE SHIFTING TECHNIQUES

Edmund G. Coccagna, Villanova, Pa., assignor to Mohawk Data Sciences Corporation, Herkimer, N.Y.

Filed Oct. 8, 1970, Ser. No. 79,103
Int. Cl. H04l 27/14
U.S. Cl. 329—104 17 Claims



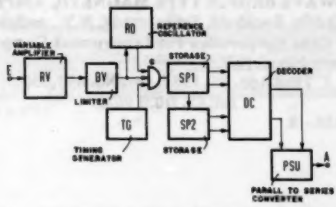
A circuit and method for converting into digital representation binary-coded input data represented by two different frequencies in an input signal. The input signal is fed to a phase-shifting circuit that generates a signal which lags or leads the input signal depending on which of the two input frequencies occur. The input signal and the output from the phase-shifting circuit are thereafter both fed to a phase-detecting circuit which provides a digital output signal indicative of whether the phase-shifted signal lags or leads the input signal. Thus, the digital output of the phase-detecting circuit indicates which of the two different frequencies occurs in the input signal.

3,739,289

APPARATUS FOR DEMODULATION OF PHASE DIFFERENCE MODULATED DATA

Karlheinz Bochmann, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Aug. 30, 1971, Ser. No. 176,164
Claims priority, application Germany, Aug. 31, 1970, P 20 43 164.5
Int. Cl. H04l 27/22
U.S. Cl. 329—104 7 Claims



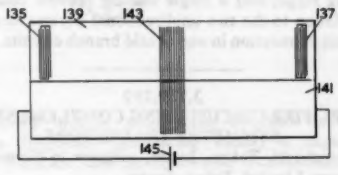
A circuit is described for demodulating phase difference modulated carrier signals. In particular for demodulating binary coded data, which are transmitted over a carrier frequency through certain phase shifts assigned, respectively, to the various data levels. A reference oscillator is provided in the demodulator for emitting a reference frequency signal having as many phases as there are phase states which have been established for message transmission. A timing generator is adjusted to produce a scanning pulse between two phase shifts, which scanning pulse has a minimum duration equal to the period of the carrier frequency. A first store is activated for the time duration of the scanning pulse. A gating pulse is generated from a crossover of the received carrier signal during the duration of the scanning pulse, and this facilitates the input of the reference phase from the reference oscillator agreeing with the carrier phase, in binary form, into the first store. Before the next scanning pulse occurs, the binary value in the first store is transferred to a second store. A decoder is provided for forming a difference value from the values in the two stores.

3,739,290

ACOUSTIC SURFACE WAVE DEVICES

Frank Graham Marshall, and Edward George Sydney Paige, both of West Malvern, England, assignors to The Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed May 2, 1972, Ser. No. 249,574
Claims priority, application Great Britain, May 5, 1971, 13,125/71
Int. Cl. H03f 3/04
U.S. Cl. 330—5.5 9 Claims



Acoustic surface wave amplifier devices wherein a coupler comprising at least several spaced filamentary conductors formed over a surface across the path of acoustic surface waves, is used to couple the acoustic surface waves to a semiconductor body mounted in close proximity to but electrically insulated from the filamentary conductors so that an

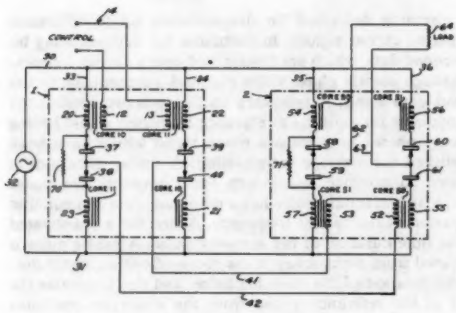
electron drift established in the semiconductor body will amplify the acoustic surface waves. The semiconductor body may be mounted alongside a substrate in which the acoustic surface waves are propagated, or over the path of the acoustic surface waves, or over part of the substrate adjacent to the path of the acoustic surface waves. The part of the coupler under the semiconductor body may be isolated from the substrate by a pad of non-piezoelectric material or by the semiconductor body.

3,739,291

HALF-WAVE BRIDGE TYPE MAGNETIC AMPLIFIER

Theodor Adam Buchhold, Schenectady, N.Y., assignor to The Sperry Rand Corporation Ford Instrument Company, Division, Long Island, N.Y.

Filed Apr. 15, 1957, Ser. No. 653,030
Int. Cl. H03f 9/00
U.S. Cl. 330—8 **3 Claims**



A multistage magnetic amplifier having an a.c. line, each stage comprising a pair of closed magnetic circuits and two branch circuits connected across said a.c. line, each branch circuit including in series a reactor winding respectively disposed on one of said magnetic circuits an impedance and two unidirectional devices, said devices in each of the stages being poled in the same direction and the devices in successive stages being respectively oppositely poled, each stage also comprising a control circuit including two control windings, one control winding being disposed on each magnetic circuit, one control winding being arranged to aid the flux induced by the reactor winding of one core and the other control winding being arranged to oppose the flux induced by the reactor winding on the other core, and means conductively connecting the control circuit of the stages after the first stage to the branch circuits of the preceding stage at points between the two unidirectional devices in each branch circuit of the said preceding stage, and a single biasing resistor connected in shunt relation to the two unidirectional devices and the control circuit connection in one of said branch circuits.

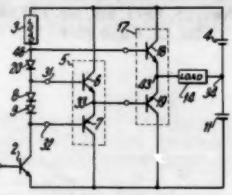
3,739,292

AMPLIFIER CIRCUIT USING COMPLEMENTARY SYMMETRY TRANSISTORS

Tokio Furuhashi, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed June 29, 1970, Ser. No. 267,697
Int. Cl. H03f
U.S. Cl. 330—17 **3 Claims**

An amplifier circuit includes two sets of complementary-symmetry transistors. The base of the PNP transistor of the second complementary symmetry stage is connected to a junction between the emitters of the NPN and PNP transistors of the first stage. The base of the NPN transistor of the second stage is connected to an impedance element and to the load.



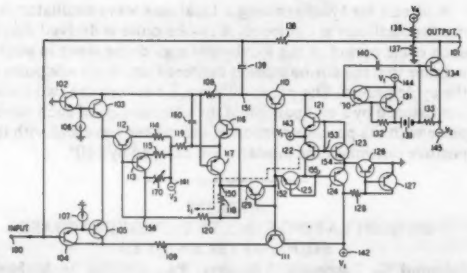
The impedance element is connected in series with the collector of a transistor in a driver circuit.

3,739,293

MONOLITHIC INTEGRATED CIRCUIT OPERATIONAL AMPLIFIER

Veikko Reynold Saari, Spring Lake Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 24, 1971, Ser. No. 201,669
Int. Cl. H03f 3/68
U.S. Cl. 330—30 D **10 Claims**



A monolithic integrated circuit operational amplifier has a Darlington connected differential amplifier input stage. The emitters of the differential amplifier are connected to a negative current source and the collectors are connected through resistors to the emitters of first and second common base transistors. The resistor in the emitter of the second common base transistor has a cross-coupled amplifier circuit in parallel with it. The collector of the first common base transistor is connected to a positive voltage source and the collector of the second is connected to a positive current source which is locked to the negative current source. This collector is also connected to the output of the circuit through a Darlington amplifier, a voltage level shift circuit, and a common-emitter transistor.

3,739,294

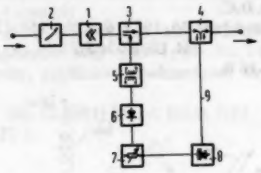
AMPLIFIER WITH A VELOCITY-MODULATED TUBE AND A COMPENSATION CIRCUIT FOR THE CORRECTION OF PHASE DISTORTIONS

Hinrich Heynisch, Grafelfing, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed July 28, 1971, Ser. No. 166,765
Int. Cl. H03f 3/54
U.S. Cl. 330—44 **5 Claims**

An amplifier with a velocity-modulated tube and a phase compensation circuit connected to the output of the tube wherein a controllable reactance is included within the phase compensation circuit and controlled in accordance with the modulation of the velocity-modulated tube by way of a directional coupler and a demodulator. The output signal of the velocity-modulated tube is reflected by way of a circulator and a line to which the controllable reactance is employed as a

line termination so that the phase rotation provided by the reflected signal of the line compensates for the phase distortion of the amplifier signal which occurs in the velocity-modulated tube.

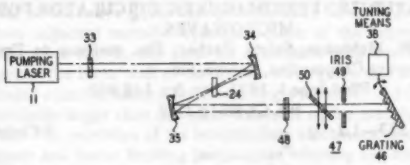


3,739,295

LASER WITH MEANS FOR SUPPRESSING BACKGROUND FLUORESCENCE IN THE OUTPUT

Jagdeep Chandravadan Shah, Matawan, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Apr. 3, 1972, Ser. No. 240,480
Int. Cl. H01s 3/08
U.S. Cl. 331—94.5 **4 Claims**



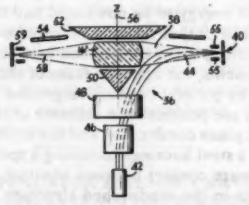
A tunable laser in which the direction of the output is invariant with frequency and is free of background fluorescence. The resonator includes a grating to tune the laser, a reflector that forms an auxiliary resonator with the grating, and a beam splitter therebetween that couples out a portion of the light returning from the grating through an aperture toward the reflector. The auxiliary resonator may employ nonreciprocal optics to reduce losses.

3,739,296

LASER SYSTEMS AND LASER CONTROL SYSTEMS

Leo Beiser, Flushing Manor, N.Y., assignor to Columbia Broadcasting System, Inc., New York, N.Y.

Continuation of Ser. No. 750,256, Aug. 5, 1968, abandoned.
This application Dec. 18, 1970, Ser. No. 99,661
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 K **22 Claims**



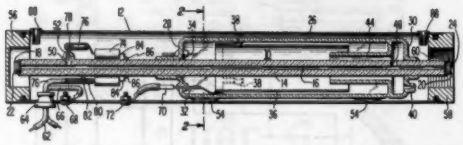
A laser resonator includes nodally-mounted, passive, refractive or reflective image-forming means separate from the lasing medium and conjugate reflective surfaces on which conjugate images are formed. Activation of a desired mode or modes of the laser is achieved by selective excitation.

3,739,297

SINGLE BORE TUBE GAS LASER

John Thomas Mark, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed June 21, 1971, Ser. No. 154,826
Int. Cl. H01s 3/02, 3/22
U.S. Cl. 331—94.5 **6 Claims**



A gas laser employing a single bore tube having the laser mirrors attached to and terminating the opposite ends thereof and a bulb surrounding the bore tube, with the ends of the bulb being attached to the bore tube at two spaced points intermediate the ends of the bore tube. A hole through the wall of the bore tube provides communication between the bore and the inside of the bulb.

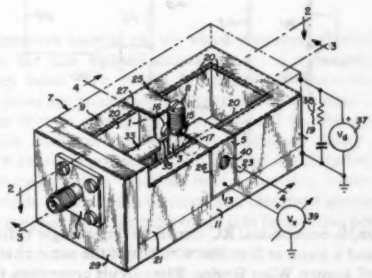
Also disclosed is means for shock mounting such a discharge tube in a cylindrical container with the axis of the bore tube in substantially coincident relationship with the axis of the container.

3,739,298

BROAD BAND TUNABLE SOLID STATE MICROWAVE OSCILLATOR

Kenneth Nobuo Kawakami, Thousand Oaks, Calif., assignor to Litton Systems, Inc., San Carlos, Calif.

Filed Jan. 12, 1972, Ser. No. 217,153
Int. Cl. H03b 7/14
U.S. Cl. 331—99 **21 Claims**

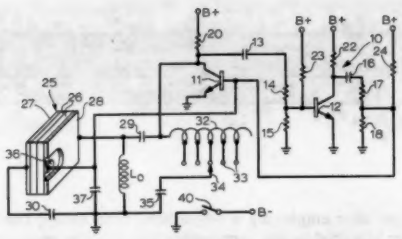


Broad band tunable solid state oscillator includes a microwave frequency generating diode; a capacitance, suitably a varactor; and an open wire transmission line of either two or three spaced conductors as a frequency determining element. The line is open along its sides and is in open communication with a bounded cavity and microwave loss material is disposed in the cavity to impart a low-Q characteristic thereto. In additional aspects the foregoing elements are arranged into a compact container which integrates therewith direct current paths from the diode and varactor for connection to external DC bias voltage sources.

3,739,299
ADJUSTABLE PIEZOELECTRIC TUNABLE OSCILLATOR FOR ACOUSTIC SIGNAL GENERATING SYSTEM

Robert Adler, Northfield, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Apr. 20, 1972, Ser. No. 246,047
Int. Cl. H03b *5/36*; H04b *11/00*
U.S. Cl. 331—116 R 14 Claims

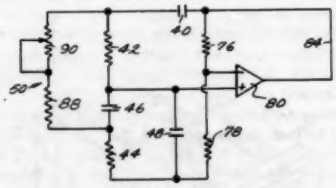


An acoustic signal transmitter includes an electronic oscillator capable of developing a signal of a given acoustic frequency within a range of such frequencies. A piezoelectric transducer forms part of the tuned circuit that controls the frequency of the oscillator. Coupled across the transducer is an electrical reactance selectively adjustable in discrete steps in order to modify the aforesaid frequency.

3,739,300
SINGLE COMPONENT CONTROLLED RC BRIDGE

Roy W. Tyre, 3069 Margavera Terrace, Chamblee, Ga.

Continuation-in-part of Ser. No. 811,350, March 28, 1969.
This application Mar. 7, 1972, Ser. No. 232,565
Int. Cl. H03b *5/26*
U.S. Cl. 331—141 6 Claims

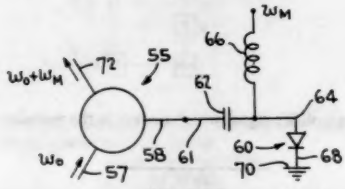


A simple economical RC circuit having a single variable element and a transfer function which is of the same character as the well known Wien Bridge. The circuit comprises two legs: the first leg comprises a resistor and a capacitor in series with a resistor or a capacitor connected in parallel across them; the second leg comprises a resistor and capacitor in series, the resistor of the second leg being connected to the capacitor of the first leg when the parallel element of the first leg is a capacitor and vice versa. In one embodiment variable resistor connects between the midpoints of the two legs when the parallel element is a capacitor or a variable capacitor connects between the midpoints if the parallel element is a resistor. The circuit is useful as a replacement for the two adjacent frequency determining legs of a Wien Bridge, for example, in a bridge-controlled oscillator, the single variable resistor or capacitor determining the resonant frequency of the circuit and therefore the oscillation frequency. Further circuits derived by reciprocity are also disclosed.

3,739,301
SINGLE DOIDE SINGLE SIDEBAND MODULATOR

Robert V. Garver, Boyds, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 30, 1971, Ser. No. 158,477
Int. Cl. H03c *3/22*
U.S. Cl. 332—16 R 8 Claims

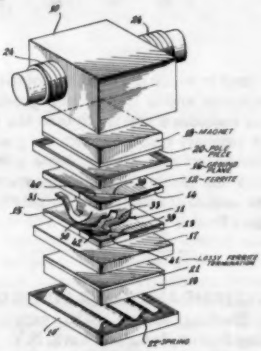


A transmission line feeds a PIN diode with an information signal. A modulating signal biases the diode so as to switch the diode between forward and reverse bias at an r.f. frequency. The PIN diode exhibits variable capacitance during switching which results in the generation, on the transmission line, of a single sideband modulated signal.

3,739,302
MINIATURIZED FERRIMAGNETIC CIRCULATOR FOR MICROWAVES

James W. McManus, Safety Harbor, Fla., assignor to Trak Microwave Corporation, Tampa, Fla.

Filed June 1, 1971, Ser. No. 148,800
Int. Cl. H01p *1/32*
U.S. Cl. 333—1.1 6 Claims

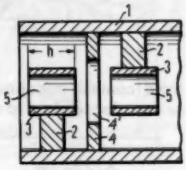


A compact strip line type microwave circulator having an internal line impedance matching means is formed by a central conductor plate with spirally slotted conductor arms connected to suitable input and output ports, wherein the length of the slots bears a direct relation to a fractional wavelength of the microwave energy to be circulated and to the impedance of the input and output lines to be matched. The spiral cut central conductor plate is sandwiched between a pair of ferrite circulator elements, the opposite faces of the ferrite elements are bounded by parallel conductive ground planes, a pair of fixed magnets are positioned in intimate contact with the opposite ground plane conductors, and the entire assembly is enclosed within a steel housing containing a spring steel wafer to maintain pressure contact between abutting parallel surfaces of all elements in the sandwiched structure. In one embodiment a high loss ferrite attenuator is included within the sandwich assembly, coupled to a terminator port arm, and biased into resonance by the circulator fixed magnets to provide fail-safe internal termination — all within a unitary structure of only approximately ¾ × ¾ × ½ inch external dimensions in the 1.5 G H_z to 3.0 GH_z range. In another embodiment a circulator was developed at 975 MH_z in a 0.7 × 0.7 × 0.2 inch size.

3,739,303
DELAY LINE FOR TRAVELLING-WAVE TUBES

Werner Veith, Franz Gross, and Konrad Pobl, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Continuation of Ser. No. 848,162, Aug. 7, 1969, abandoned. This application May 7, 1971, Ser. No. 141,371
Claims priority, application Switzerland, Sept. 12, 1968, 13667/68
Int. Cl. H01j 25/34; H03h 7/30
U.S. Cl. 333—31 A 3 Claims

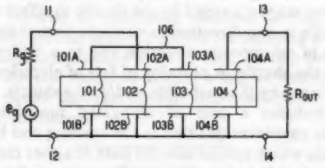


A delay line for travelling-wave tubes is formed by a hollow wave guide having hollow cylindrical metallic cylinders individually disposed concentrically of and spaced-apart along the longitudinal axis of the travelling-wave tube and intermediate electrodes disposed between adjacent metallic cylinders. Each of the metallic cylinders is connected to the inner wall of the wave guide on opposite sides of the wave guide from adjacent metallic cylinders. Each of the intermediate electrodes are in the form of a metallic ring which bears against the inner wall of the hollow wave guide and which includes a central inner aperture having a diameter which is substantially larger than the outer diameter of the metallic cylinders. The provision of the intermediate electrodes extends the upper and lower limiting frequencies whereby the dispersion curve of the travelling-wave tube becomes steeper and the pass band is reduced to prevent pre-oscillation and parasitic operation.

3,739,304
RESONATOR INTERCONNECTIONS IN MONOLITHIC CRYSTAL FILTERS

Arthur Rechtman Braun, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 27, 1971, Ser. No. 183,863
Int. Cl. H03h 7/10, 9/00
U.S. Cl. 333—72 14 Claims



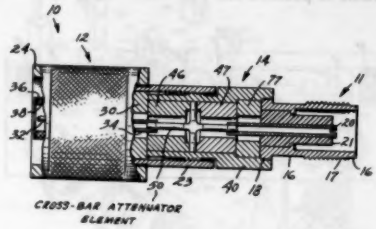
In a multiresonator modified monolithic crystal filter employing a combination of mass loading and acoustic coupling, a direct nongrounded conductor, external to the piezoelectric body between two of the resonators, establishes a second transmission path through the filter. Attenuation peaks with control over their position are established thereby which enhances filter selectivity.

3,739,305
COAXIAL ATTENUATOR ASSEMBLY HAVING CROSS-SHAPED ATTENUATOR ELEMENT

Herbert F. Engelmann, Kinnelon, N.J., assignor to Engelmann Microwave Company, Montville, N.J.

Filed Oct. 20, 1971, Ser. No. 190,768
Int. Cl. H01p 1/22
U.S. Cl. 333—81 A 4 Claims

A low value attenuator for high frequency coaxial applications. The attenuator incorporates a cross-bar attenuator element which includes a pair of resistive bar elements which extend in perpendicular fashion with respect to one another and are electrically connected at their mutual intersection. A pair of spacers support the attenuator element in such fashion in the attenuator assembly that the first bar is coaxial with the



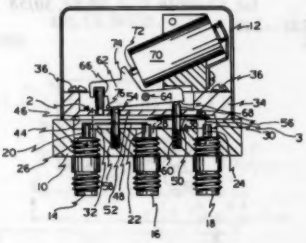
CROSS-BAR ATTENUATOR ELEMENT

axial inner conductor of the assembly and the ends of the second bar electrically contact the outer coaxial conductor. The outer ends of both bars are provided with conductive portions to enable the electrical connections, the connection to the coaxially aligned bar being effected by a pair of coaxial resilient female connectors.

3,739,306
MICROWAVE COAXIAL SWITCH

Norbert Joseph Sladek, Fairfield, Conn., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Sept. 3, 1970, Ser. No. 69,345
Int. Cl. H01p 1/10
U.S. Cl. 333—97 S 4 Claims



A microwave coaxial switch which provides relatively high isolation for the unused channel over a relatively large frequency band. The switch terminals and interconnecting switch blades are positioned in a rectangular chamber proportioned to form a waveguide below cut-off for the principal waveguide mode in the operating frequency range of the switch. A recess is provided in the wall of the chamber above the terminals with a terminal-interconnecting blade being positioned in the recess in physical and electrical contact with the recess upper wall when the blade is in its inactive position.

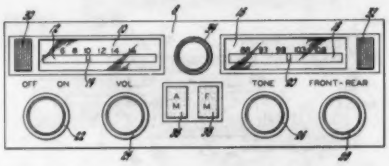
3,739,307
DUAL TURRET MECHANISM FOR GENERATING A TUNING VOLTAGE FOR A VOLTAGE TUNED AM-FM RADIO RECEIVER

Terrance W. Maugans, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 5, 1972, Ser. No. 241,241
Int. Cl. H03j 5/30, 5/32
U.S. Cl. 334—2 4 Claims

An apparatus for generating tuning voltages for a voltage tuned AM-FM radio receiver including AM and FM turrets each including a plurality of potentiometer assemblies, the wiper arms of which are positioned so as to generate voltages for tuning the respective tuned circuits in the AM and FM sections of the radio receiver. Ratchet mechanisms for each of the AM and FM turrets index the respective turrets to selec-

tively position the potentiometer assemblies in a tuning station at which a tuning voltage is picked off and supplied to the tuned circuits. A tuning mechanism is manually actuated and latched into engagement with a drive mechanism for the wiper arm of the potentiometer positioned at the tuning station and is operable to position the wiper arm to generate the desired

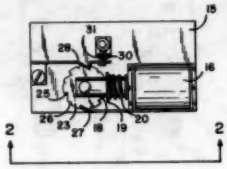


tuning voltage. AM and FM band selector push buttons are provided to position the tuning mechanism so as to selectively position the wiper arm of the potentiometer in the tuning station of either the AM or FM turrets. An unlatching mechanism is provided for unlatching the tuning mechanism upon the actuation of either of the ratchet mechanisms or either of the AM and FM band selector push buttons.

3,739,308
ELECTROMAGNETIC SWITCHING DEVICE WITH MOVABLE RATCHET

William Paul, Escondido, Calif., assignor to Switchpack Systems, Inc., Solana Beach, Calif.

Filed Sept. 27, 1971, Ser. No. 183,877
Int. Cl. H01h *3/34, 50/64, 50/58*
U.S. Cl. 335—140 4 Claims



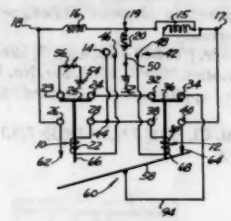
The disclosure comprises an electric relay switching device having a solenoid coil; a magnetically responsive armature adapted for reciprocal movement; a pair of electrical switching contacts; a cam device rotatably secured to said reciprocating armature and adapted for reciprocation therewith, said cam device being formed with a plurality of recesses; stationary detent means adapted to cause said cam to rotate upon reciprocation thereof, said switching means being responsive to the rotation of said cam device.

3,739,309
SOLENOID ACTUATED SWITCHING DEVICE FOR ELECTRIC MOTOR CONTROL CIRCUIT

Thomas B. Dalton, Muskegon, Mich., assignor to Westran Corporation, Muskegon, Mich.

Division of Ser. No. 2,259, Jan. 12, 1970, Pat. No. 3,593,084.
This application Feb. 1, 1971, Ser. No. 111,601
Int. Cl. H01h *50/18, 50/64, 3/42*
U.S. Cl. 335—181 1 Claim

A solenoid actuated switching device for an electric motor control circuit for selectively connecting and disconnecting a pair of input terminals of an armature of an electric motor to a source of electrical power to selectively brake and reverse the rotation of the armature. Two solenoids move against respective sides of a pivoted arm member thereby actuating one of two switches, each having fixed and movable contacts. The first fixed contact is connected in circuit only after the first solenoid has been deenergized to retract the armature thereof,

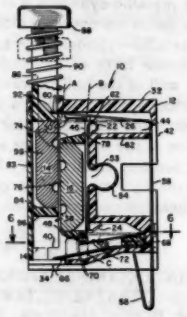


and the second fixed contact is connected only after the second solenoid has been deenergized to retract its armature.

3,739,310
ELECTRICAL SWITCH

Lloyd J. Lapointe, 52 Westbrook Road, West Hartford, Conn.

Continuation of Ser. No. 74,582, Sept. 23, 1970, abandoned.
This application Mar. 17, 1972, Ser. No. 235,783
Int. Cl. H01h *13/00, 5/02*
U.S. Cl. 335—207 33 Claims



A magnetically operated electrical switch having a housing supporting a manually operable push slide and a freely movable shuttle. A magnet carried by the push slide cooperates with another magnet carried by the shuttle to effect movement of the shuttle in one direction in response to movement of the push slide in an opposite direction and to a critical position relative to the shuttle. A plurality of sets of electrical contacts are conditioned by the push slide and/or the shuttle. Each contact set includes a pair of elongated movable contacts mounted in cantilever position in the housing and having free end portions which extend into the path of either the shuttle or both the push slide and the shuttle. Operational characteristics of the switch are determined by the length of the free end portions of the various movable contacts. In accordance with one embodiment of the invention, at least one of the contact sets includes an electro-mechanical transducer or piezoelectric crystal which serves both as a stationary contact and a source of electromotive force.

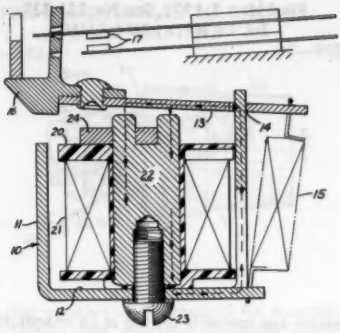
3,739,311
BOBBIN ASSEMBLY FOR RELAY

Roman F. Garbark, Northlake, Ill., assignor to D. Gottlieb & Company, Chicago, Ill.

Filed Aug. 21, 1972, Ser. No. 282,312
Int. Cl. H01f *3/14*
U.S. Cl. 335—276 4 Claims

A bobbin assembly in an electric relay, the bobbin having a pair of flanges and with one of the flanges having an associated cap which at least partially encloses the end of the bobbin and

which serves as a seating surface for an iron core, the cap having windows formed therein to provide access for a staking tool so that the core is held captive within the bobbin prior to assembly in the relay. The outer end of the core carries a shad-



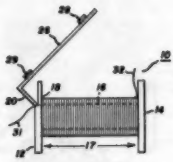
ing ring which is held in registered position by an embossment. The cap is clamped between the core and the frame of the relay to provide a magnetic gap thereby to reduce the level of residual flux when the relay coil is de-energized.

3,739,312

SPOOL WITH MEANS FOR START WIRE INSULATION

William J. Knebel, Waynesboro, Va., assignor to General Electric Corporation, Waynesboro, Va.

Filed June 19, 1972, Ser. No. 264,002
Int. Cl. H01f 15/10, 27/30
U.S. Cl. 336—192 9 Claims



A spool formed of insulating material having two end flanges axially spaced apart on a core for carrying a wire coil, one end flange containing a slot and flap, the flap being foldable against the end flange to protect a lead-in end of the wire coil which passes through the slot and is positioned between the flap and the flange.

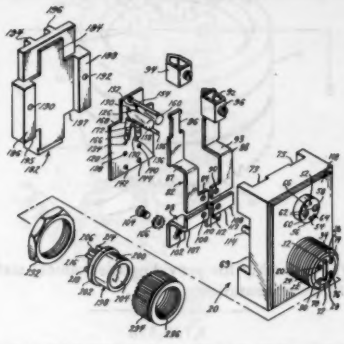
3,739,313

PROTECTORS FOR ELECTRIC CIRCUITS

Aldino J. Gain, St. Louis, and Angelo Urani, St. Louis, both of Mo., assignors to McGraw-Edison Company, Elgin, Ill.

Filed Feb. 19, 1971, Ser. No. 116,819
Int. Cl. H01h 85/02, 85/32, 85/54
U.S. Cl. 337—206 15 Claims

An electric fuse has a cup-like housing that is subdivided into two separate compartments by a partition; and each compartment has a fusible element therein which is embedded within arc-extinguishing material. A portion of the partition projects beyond the cup-like housing to enter a slot in a fuseholder to automatically align the terminals of the electric fuse with the fuse-receiving terminals of the fuseholder. An indicating lamp is connected in parallel with one of the fusible elements, and a second indicating lamp is connected in parallel with the other fusible element; and the conductors which connect those indicating lamps to the "load" terminals of the fuseholder are spaced far enough apart to prevent "arc over" but are close enough to each other to capacitively couple those lamps together in the event a transitory "fault" causes



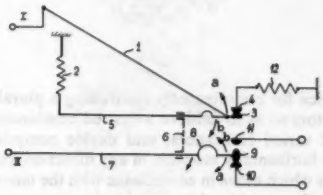
both of those fusible elements to "blow" and both of those lamps to become illuminated.

3,739,314

HEAT RESPONSIVE SWITCHING DEVICES

Philippe Rouvre, and Francois Peroy, both of Billancourt, France, assignors to Regie Nationale Des Usines Renault, Paris, France

Filed Sept. 17, 1971, Ser. No. 181,473
Claims priority, application France, Sept. 23, 1970, 7034460
Int. Cl. H01h 37/50
U.S. Cl. 337—395 2 Claims



This thermal switching device is intended for switching a circuit with different time periods for the opening and closing thereof and is characterized in that it consists of a conducting wire having a relatively substantial coefficient of thermal elongation, said wire being connected at one end to a switch and at the other end to one end of a flexible blade carrying at this end a contact adapted to engage another contact connected via a first resistor to ground and at the other end through a second resistor of considerably greater value than the first resistor to ground, said blade further comprising a link actuating a movable blade contact adapted to open or close through a switch the circuit to be switched.

3,739,315

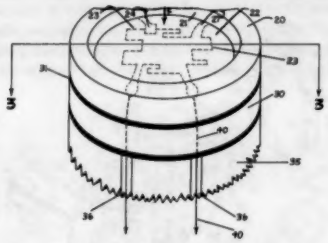
SEMICONDUCTOR TRANSDUCERS HAVING H SHAPED CROSS-SECTIONAL CONFIGURATIONS

Anthony D. Kurtz, Englewood; Joseph Mallon, Wood Ridge, and Charles Gravel, River Edge, all of N.J., assignors to Kulite Semiconductors Products, Inc., Ridgefield, N.J.

Filed May 18, 1972, Ser. No. 254,642
Int. Cl. G01l 1/22
U.S. Cl. 338—3 4 Claims

There is disclosed a piezoresistive transducer assembly having a thin force collecting diaphragm interposed between two

annular rims to afford a H shaped cross-sectional configura-



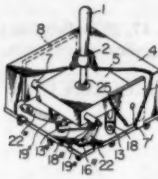
tion to the assembly for providing mechanical stability and temperature compensation.

3,739,316

COORDINATED CONTROL DEVICE FOR VARIABLE RESISTORS

Tsugio Tokubo, Yokohama, Japan, assignor to Teikoku Tsushin Kogyo Co. Ltd., Kawasaki-shi, Kanagawa-ken, Japan

Filed May 1, 1972, Ser. No. 249,241
Claims priority, application Japan, Oct. 30, 1971, 46/086388
Int. Cl. H01c 9/02
U.S. Cl. 338—128 15 Claims



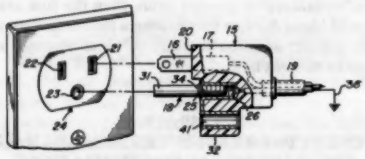
A device for coordinatedly controlling a plurality of variable resistors so as to achieve a desired combination of a plurality of varied resistances, said device comprising a plate member horizontally movable in any direction and a plurality of wipers which move in accordance with the movement of the horizontally movable plate member in engagement therewith respectively maintaining contact with a resistor.

3,739,317

ELECTRICAL FITTING INCORPORATING EQUIPMENT GROUND IN CONNECTION WITH TWO-WIRE AND THREE-WIRE RECEPTACLES

Melvin Wise, 223 Bellewood Avenue, Dayton, Ohio

Filed Oct. 12, 1971, Ser. No. 188,237
Int. Cl. H01r 3/06
U.S. Cl. 339—14 P 18 Claims



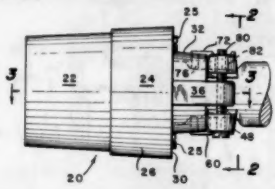
An electrical fitting which can be selectively connected to either a three-wire receptacle or a two-wire receptacle by reorientation of the ground male element within the fitting. An equipment ground connection is also established during selective connection between the electrical fitting and either the three-wire receptacle or the two-wire receptacle.

3,739,318

CONNECTOR CAP ASSEMBLY

Paul H. Winter, William F. Davis, both of Syracuse, and Harold E. Meloling, Clay, all of N.Y., assignors to Pass and Seymour, Inc., Syracuse, N.Y.

Filed Mar. 5, 1971, Ser. No. 121,339
Int. Cl. H01r 13/44, 13/58
U.S. Cl. 339—36 3 Claims



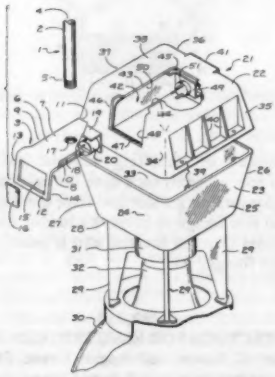
A connector cap assembly for use in an attachment plug or cable connector wherein the cap assembly comprises a cylindrical body having an open bottom and a top with a cylindrical wall extending upwardly therefrom. A pair of supporting ears projects upwardly from the top to adjustably carry a pair of clamping members by means of a pair of screw assemblies. Cooperating guide means are provided on the clamping members and the wall portions to assure alignment of the clamping members throughout their entire travel.

3,739,319

MECHANICAL AND ELECTRICAL DISCONNECT

Willard R. Garnett, Bellefontaine Neighbors, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 14, 1971, Ser. No. 133,962
Int. Cl. H01r 13/62
U.S. Cl. 339—66 R 6 Claims



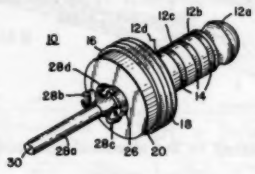
A high intensity gaseous discharge luminaire has a self-contained power connection. A supporting assembly has a tubular wire guide portion with a slide insert mounted on it. The luminaire housing enclosure has a slide insert track along a top and one side wall. The luminaire housing is movable from a disengaged, open position to an engaged, closed position defined by union of the housing and slide insert. The luminaire housing and slide insert each have electrical quick connects positioned to interlock in the closed position. When so interlocked, the tubular wire guide and slide insert support the entire weight of the luminaire housing.

3,739,320

STRAIN RELIEF MEMBER AND METHOD OF MANUFACTURING SAME

William H. Flanagan, Stamford, Conn., assignor to Nexus, Inc., Stamford, Conn.

Filed Sept. 23, 1969, Ser. No. 860,224
Int. Cl. H01r 13/58
U.S. Cl. 339—103 R 1 Claim



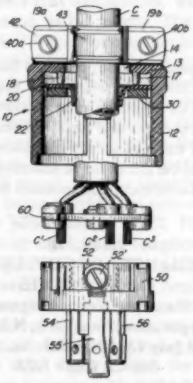
A strain relief member and a method for manufacturing same for utilization with electrical connector components comprising an angular support member formed integrally with and disposed entirely within the electrical component and a clamp member capable of compressing a cable into engagement with one surface of the angular support member.

3,739,321

DUST SEAL FOR ELECTRIC CONNECTORS

Robert M. Murphy, Fairfield, and Conrad M. Powell, Glastonbury, both of Conn., assignors to Arrow-Hart, Inc., Hartford, Conn.

Filed Mar. 17, 1971, Ser. No. 125,050
Int. Cl. H01r 13/58
U.S. Cl. 339—103 B 9 Claims



An electrical connector is provided with a thin centrally apertured resilient dust seal gasket that is adapted to hug a conductor cable passing through it. The gasket is held within a cylindrical insulating shell against a radial wall thereof by a flexible wafer made of nylon or equivalent, which in turn is secured to the shell by pins molded with the shell and on which the dust gasket and then the wafer are impaled. The assembly of the gasket and wafer within the shell is done in one pushing operation.

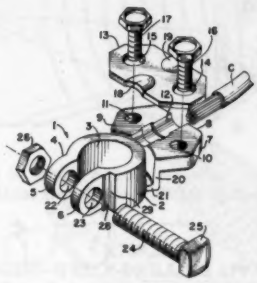
3,739,322

BATTERY TERMINAL CLAMP

Clarence B. Haegert, 12th and Elm Street, Coffeyville, Kans.

Filed July 27, 1971, Ser. No. 166,419
Int. Cl. H01r 11/26
U.S. Cl. 339—230 R 21 Claims

A battery terminal clamp for storage batteries comprising a bifurcated clamping body portion having a substantially circular opening therethrough, said battery terminal clamp having means thereon for clamping said battery terminal about a battery terminal post in such a manner that substantially the entire clamping body portion yields and uniformly engages a battery terminal post when said battery terminal is tightened on a battery terminal post.

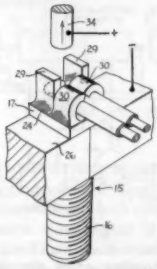


3,739,323

ELECTRICAL TERMINAL CONNECTOR

James A. Spors, West Bend, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed Apr. 24, 1972, Ser. No. 247,161
Int. Cl. H01r 5/04
U.S. Cl. 339—275 3 Claims



A terminal member is initially in the form of a screw having a head that is square as viewed along the screw axis, with integral upstanding flanges extending along a pair of its opposite sides. End portions of leads are laid between the flanges. The flanges are sheared in half parallel to the screw axis and simultaneously the rear tabs of the flanges are bent inwardly and down to grip the leads. The extreme front end portions of the leads, between the still upstanding front tabs, are then resistance welded to the head.

3,739,324

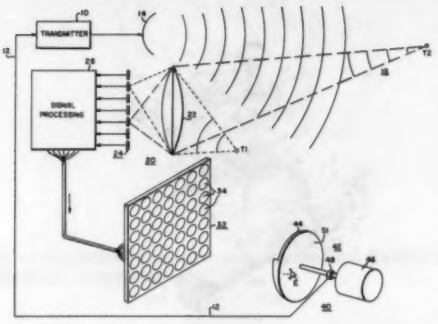
SYSTEM FOR VIEWING DETECTED OBJECTS

John W. Coltman, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 22, 1970, Ser. No. 100,679
Int. Cl. G01s 9/66
U.S. Cl. 340—3 C 6 Claims

An array of sonar receiving elements provides signals to a corresponding array of display lights upon receipt of target signal returns from a field under investigation. The display is viewed by an observer having one eye placed behind a rotating

transparent disk having front and rear surfaces at an angle relative to one another, and which angle varies as the disk is



rotated, thereby changing the apparent position of the display lights as a function of time.

3,739,325

METHOD AND DEVICE FOR EVALUATING ECHO SIGNALS WITH ECHO SOUNDING SYSTEMS HAVING DIGITAL INDICATION

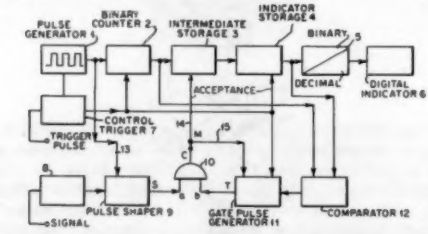
Reinhard Ludwig, Kiel, Germany, assignor to Electroacustic Gesellschaft m.b.H., Kiel, Germany

Filed June 10, 1971, Ser. No. 151,847

Claims priority, application Germany, June 13, 1970, P 20 29 311.2

Int. Cl. G01s 9/68

U.S. Cl. 340—3 R 4 Claims



Method of evaluating echo signals with echo sounding systems having digital indication of the sounding depth determined by the transmission time of the bottom echo includes comparing the transmission time of at least those echo signals having the intensity of bottom echos appearing in a given sounding period with the transmission time corresponding to the sounding results of a preceding sounding period and, from these echo signals, evaluating as bottom echo that signal having a transmission time differing least from the transmission time of the echo signal evaluated as bottom echo in the preceding sounding period; and system for carrying out the method.

3,739,326

HYDROPHONE ASSEMBLY

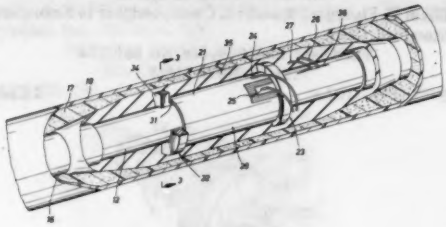
Wayne L. Kerr; Thomas W. Duggan, both of Houston, Tex., and Billy W. Davis, Flagstaff, Ariz., assignors to Schlumberger Technology Corporation, New Y ork, N.Y.

Filed July 26, 1971, Ser. No. 166,251

Int. Cl. G01v 1/38

U.S. Cl. 340—7 R 7 Claims

A hydrophone assembly for use in a marine streamer having a cable core includes a piezoelectric crystal in the form of cylinder that is mounted in concentric relation on the cable core by cap assemblies. Each cap assembly is formed in two separate halves that can be fitted together and sealed with respect to the cylinder and core after the crystal is in place and



has been connected to the electrical conductors inside the core.

3,739,327

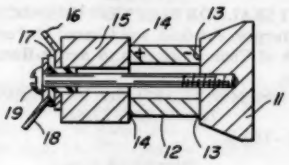
ELECTROACOUSTIC TRANSDUCERS OF THE MASS LOADED VIBRATILE PISTON TYPE

Donald P. Massa, Cohasset, Mass., assignor to Massa Division Dynamics Corporation of America, Hinghams, Mass.

Filed Dec. 16, 1970, Ser. No. 98,631

Int. Cl. H04b 13/00

U.S. Cl. 340—10 R 17 Claims



A cylindrical, piezoelectric, ceramic transducer is clamped between an electrically conductive mass element and a vibratile piston. The electrical connection is completed from the piston via a stress bolt to a terminal near the mass element. This arrangement enables sturdy electrical connections to be made to electrodes on the ceramic material and eliminates soldered wire, or foil electrical connections to the ceramic.

3,739,328

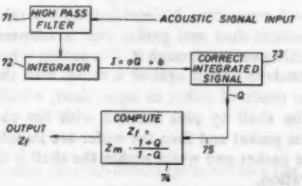
ACOUSTIC IMPEDANCE LOGGING USING REFLECTION COEFFICIENTS

Ralph G. Bell, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed July 13, 1970, Ser. No. 54,419

Int. Cl. G01v 1/28

U.S. Cl. 340—15.5 AC 16 Claims



An illustrative embodiment of the present invention includes methods and apparatus for making measurements of the acoustic impedance of earth formations surrounding a well borehole. The acoustic reflection coefficient in the frequency region above 5 KHZ is measured and used in analog computer apparatus in conjunction with the known borehole mud impedance to determine the acoustic impedance of formations surrounding the borehole from a predetermined expression.

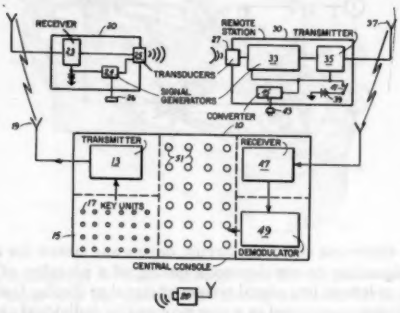
The process is repetitively performed at different borehole depths to give a log of this quantity.

3,739,329

ELECTRONIC SYSTEM FOR LOCATING

Robert W. Lester, Manhasset, N.Y., assignor to Recognition Devices, Inc., Manhasset, N.Y.

Filed May 24, 1971, Ser. No. 146,040
Int. Cl. G01s 3/80
U.S. Cl. 340—16 R **13 Claims**



An electronic locating system includes a central console having a transmitter, receiver, and a display means, and a plurality of portable transreceiver units, and a plurality of stations located at various places such as rooms on the premises where the system is installed. The transmitter is adapted to transmit signals of particular UHF frequencies, each signal being identified with a person to be sought. The portable unit is tuned to receive the UHF signal of a particular frequency code and generate an ultrasonic sound wave. A station adjacent to the portable unit (but within the same room) is adapted to receive the ultrasonic sound wave and generate an UHF signal frequency identified with the station. The receiver is adapted to receive the UHF signal transmitted by the station and the display means adapted to indicate the location of the station transmitting the UHF signal, thereby identifying the room location of the person being sought. The system includes means for utilizing existing power supply wires. The system is also adapted to operate with the existing telephone switching networks for enabling a person to be connected with another person within the premises by automatically ringing the telephone located near the other person in the same room. This system completely eliminates all types or forms of paging which require the cooperation of the person being sought and which do not give him the same dignity. With the present locating system, circumvertion is not possible if continuous scanning is used. Also a most important aspect is the fact that a person may not be able to answer (as in a restroom) which would be indicated to the caller who is always the only one involved.

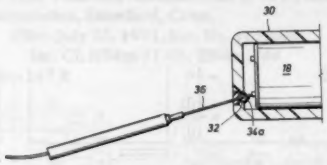
3,739,330

GEOPHONE ASSEMBLY

Gerald D. Hazelhurst; Don L. Fussell, and Hayward T. Guyton, all of Houston, Tex., assignors to Mark Products, Inc., Houston, Tex.

Filed July 8, 1970, Ser. No. 53,195
Int. Cl. G01v 1/16
U.S. Cl. 340—17 **9 Claims**

A geophone is enclosed by a case of nonconductive material to provide a geophone assembly for connecting into an external electrical circuit. An opening is provided in the case in which an electrical contact or probe can be located to make electrical contact with the internal circuit of the geophone by engaging a component of the circuit, such as a terminal external of the geophone housing or the housing itself, which may become part of the internal circuit when the geophone is lying on its side. This allows the internal circuit of an individual



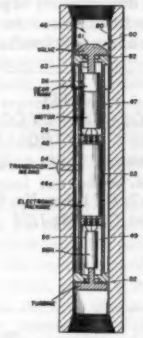
geophone to be tested without removing the case from the geophone. Means are provided for closing the opening.

3,739,331

LOGGING-WHILE-DRILLING APPARATUS

John K. Godbey, Dallas; Daniel E. Hawk, Duncanville, and Vasel R. Slover, Jr., Irving, all of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed July 6, 1971, Ser. No. 159,989
Int. Cl. G01v 1/40
U.S. Cl. 340—18 LD **11 Claims**



An improved logging-while-drilling apparatus comprising a drill collar having a logging-while-drilling tool therein. The tool has a turbinelike, rotary valve which opens and closes at a rate to generate a pressure wave signal in the drilling fluid representative of a measured downhole condition. The tool includes means to adjust the gap between the rotor and stator of the valve to thereby adjust the strength of the signal thus generated. A sleeve of wear resistant material is provided in the collar adjacent the valve to reduce erosion caused by the drilling fluid.

3,739,332

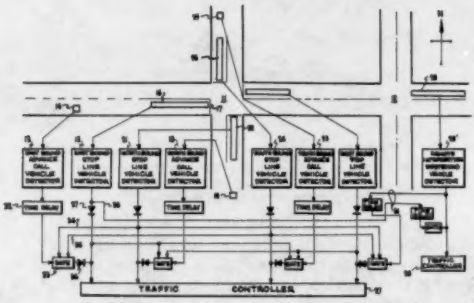
ADVANCE CALL SYSTEM FOR VEHICULAR TRAFFIC CONTROL

Renato G. Martinez, 36 Doud Drive, Los Altos, Calif.

Filed July 8, 1971, Ser. No. 160,800
Int. Cl. G08g 1/08
U.S. Cl. 340—37 **5 Claims**

A vehicle moving along a traffic lane towards a light controlled intersection is sensed by a first vehicle detector at a location remote from the intersection, and an "advance call" signal is generated by the first vehicle detector. The advance call signal is impressed immediately upon a traffic controller, and a capacitor or other storage means continues to hold the signal until the vehicle is sensed by a second or principal vehicle detector located close to the intersection. The traffic lights are thereby changed to green in advance of the vehicle approaching the intersection, so that the vehicle need not stop or slow down unduly. In the event that other traffic exists that might conflict with the vehicle, call signals from vehicle detec-

tors of conflicting phases of the controller will inhibit the advance call signal causing the controller to operate in a normal mode without the advance call signal. Where a street or highway has two or more spaced apart intersections, a vehicle detector may serve in a dual capacity of providing a call signal for the controller of the first intersection and an advance call signal for the controller of the next intersection.

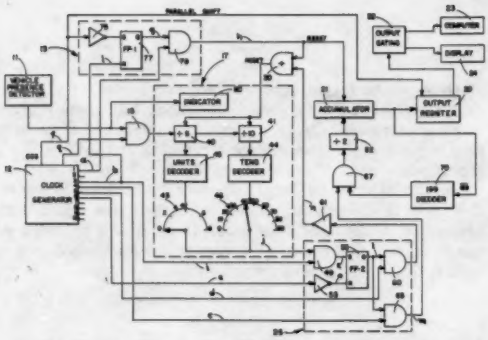


3,739,333

VEHICLE LANE OCCUPANCY COMPUTER FOR TRAFFIC CONTROLLER

Gary L. Meredith, Anaheim, Calif., assignor to Tamar Electronics, Inc., Anaheim, Calif.

Filed June 7, 1971, Ser. No. 150,337
Int. Cl. G08g 1/01
U.S. Cl. 340—31 A **8 Claims**



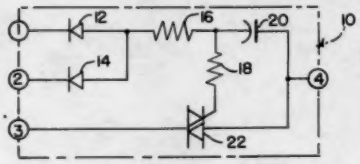
The invention is concerned with computing the percentage of a total time period that a particular point on a roadway is occupied by vehicles. Pulses generated by a clock generator are fed to a gating circuit, the gate of this circuit being controlled by the output of a vehicle presence detector which is installed on the roadway being monitored. The output of the gating circuit is fed to a scaling counter where a particular desired scale factor is selected. The output of the scaling counter is fed through an appropriate commutator to an accumulator, where a digital count in accordance with the road occupancy conditions as taken on successive samples is accumulated. The digital output of the accumulator is fed to an output register from which digital readings in accordance with the road occupancy conditions is provided to computing and display circuitry for appropriate utilization.

3,739,334

PILOT LAMP ELECTRONIC MULTI-SWITCHING CIRCUITRY

Loren P. Hocking, 16495 East Eight Mile Road, East Detroit, Mich.

Filed Aug. 4, 1971, Ser. No. 168,955
Int. Cl. G09f 9/32
U.S. Cl. 340—334 **18 Claims**



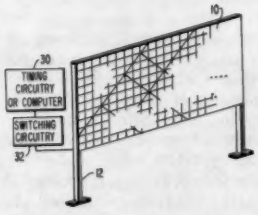
An electronic switching circuit, device and system for selective signalling or simultaneous testing of a plurality of pilot lights or lamps. In a plural system of signal or display lamps or pilot lights, connected in a common and/or individual circuits for signalling current flow or creating a display on an individual or multiple basis, the electronic switching device and circuitry performs dual functions of testing and signalling the lamp or pilot light, without modification of conventional electrical circuitry. The components of the electronic switching circuitry can be embodied into a unitary device.

3,739,335

TRAFFIC PATTERN SIMULATOR

John J. Matysek, P.O. Box 5566, Crozet, Va.

Continuation-in-part of Ser. No. 863,309, Oct. 2, 1969, Pat. No. 3,605,084, which is a continuation-in-part of Ser. No. 826,212, May 20, 1969, Pat. No. 3,644,884. This application Mar. 19, 1971, Ser. No. 126,168
Int. Cl. G08g 1/00
U.S. Cl. 340—40 **12 Claims**

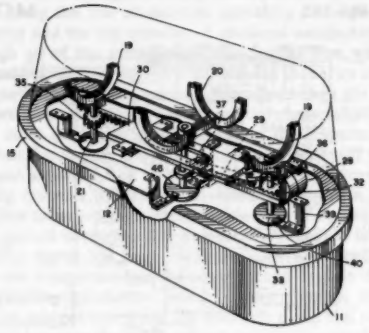


A modular simulator permitting study of traffic flow patterns under various traffic control conditions. Street intersection simulator modules are provided, each including on its front panel or face a plurality of street intersections with traffic control indicators for each traffic phase at each intersection. A plurality of timing circuitry modules generate various timing signals, and a plurality of switching modules permit selection of the particular timing signals provided to each traffic control indicator. The street intersection simulator modules are mounted on a frame for easy viewing. The modular construction permits the provision of as large a simulator as desired.

3,739,336
EMERGENCY VEHICLE WARNING LIGHT

Oliver J. Burland, 214 Rugley Road, Western Springs, Ill.

Filed July 28, 1971, Ser. No. 166,673
Int. Cl. B60q 1/52; F21q 1/00
U.S. Cl. 340—50 1 Claim

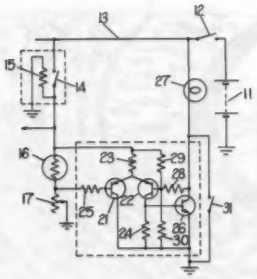


An emergency vehicle warning light having three aligned lamp units with the middle unit having a double lamp, each unit being mounted on a vertical post for oscillation in a horizontal plane, the source of electrical current to the lamps being delivered through the bottom ends of the posts.

3,739,337
FUEL GAUGE OPERATING CIRCUITS FOR ROAD VEHICLES

William Frank Hill, Stafford, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Mar. 9, 1971, Ser. No. 122,477
Claims priority, application Great Britain, Apr. 14, 1970, 17,559/70
Int. Cl. B60q 1/00; G01f 23/10
U.S. Cl. 340—59 5 Claims

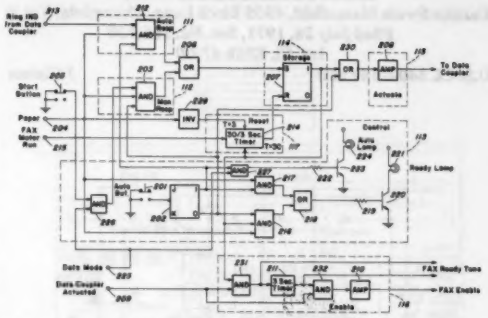


A fuel gauge operating circuit for a road vehicle has a pair of supply lines powered by the vehicle battery and a thermally operable voltage regulator including a vibrating contact through which the fuel gauge is connected to one supply line. The fuel gauge is connected to the other supply line through a variable resistor the value of which is determined by the level of the fuel in the fuel tank, and a transistor is connected in series with the warning lamp between the supply lines. A switching circuit is connected between the supply lines in series with the voltage regulator contact, and the switching circuit has an input connection to the junction of the fuel gauge and the variable resistor and an output connection to the base of the transistor so that the warning lamp flashes when the fuel level is low.

3,739,338
DATA COUPLING APPARATUS

Charles L. Jacobson, Pittsford; Stanley J. Zurakowski, Fairport, and John Tambert, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed July 23, 1971, Ser. No. 165,684
Int. Cl. H04m 11/06; H04n 1/44
U.S. Cl. 340—147 R 20 Claims

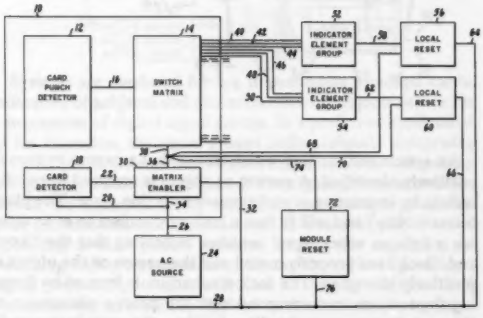


A data device is automatically or manually connected to a communication channel to permit the communication of data over said communication channel between the data device and a remote device. Control means are provided to selectively determine an automatic or manual mode of operation. When in said automatic mode, automatic responding means responds to a signal representing a request by a remote device coupled to the communication channel to communicate with the data device for providing a communication path between the data device and the communication channel. When in said manual mode, manual responding means responds to the manual operation of switch means for providing a communication path between the data device and the communication channel. Once the communication path is established between the data device and the communication channel, irrespective of the mode of operation, enabling means is activated to initiate an operation of the data device. The present invention may be utilized for transmitting data over a conventional telephone system and is adapted to be combined with an automatic data coupling unit provided by various public telephone companies.

3,739,339
WAREHOUSE INDICATOR SYSTEM

Arthur S. Hillhouse, Colts Neck, N.J., and Alvin J. Fanthorp, Covington, Ky., assignor to The Great Atlantic & Pacific Tea Company, Inc., New York, N.Y.

Filed Sept. 23, 1971, Ser. No. 183,071
Int. Cl. G08b 5/36; H04q 1/30
U.S. Cl. 340—147 A 10 Claims



A system responsive to a punched card defining ordered items in ordered quantity is disclosed for providing quantity

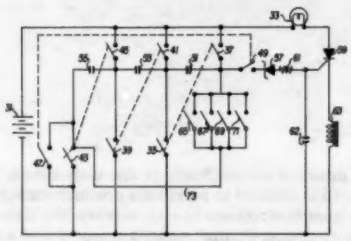
indication at warehouse locations containing the items. A group of indicator elements is disposed at each item location and, where the punched card defines ordered quantity by a binary number, each indicator group provides a binary indication of ordered quantity.

3,739,340

ELECTRONIC LOCK SYSTEM

Carlton Swain Moorefield, 4935 Birch Lane, Alexandria, Va.

Filed July 28, 1971, Ser. No. 166,730
Int. Cl. E05b 47/00
U.S. Cl. 340—147 MD 3 Claims



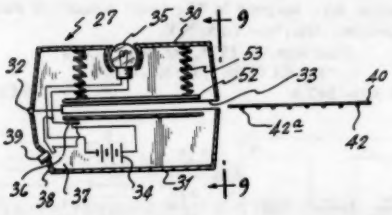
An electronic lock control circuit having a voltage source and means for charging a plurality of storage elements from said source. The storage elements are connected in series to a gating device. The combined voltage of all the storage elements is required to activate the gating means which, in turn, passes the activating energy for the lock.

3,739,341

CODED PLATE FOR POSITIVE IDENTIFICATION

Marvin Tessler, 260-05 57th Avenue, Little Neck, N.Y.

Filed Dec. 7, 1970, Ser. No. 95,565
Int. Cl. H04q 1/00
U.S. Cl. 340—149 A 7 Claims



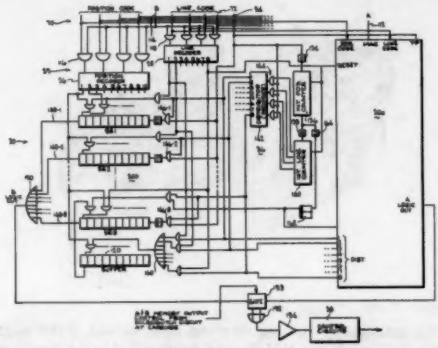
An article and method which insure that a person or item is positively identified. A person or object is assigned a specific indicia by imprinting protuberances on a thin plate. The plate forms a "key" and will fit into a lock mechanism so as to actuate a light or other signal member indicating that the "key" and "lock" are properly mated and the person or the object is positively identified. The lock mechanism is formed by forming depressions to correspond with the precise placement of the protuberances on the "key." When the protuberances fit within the depressions a signal indicating proper mating is given.

3,739,342

SELECTIVE RETRIEVAL AND MEMORY SYSTEM

Dieter Kortenhaus, Bingen, Germany, assignor to NSM Apparatebau GmbH, Bingen/Rhine, Germany

Filed May 26, 1971, Ser. No. 147,082
Claims priority, application Germany, Jan. 22, 1971, P 21 03 029.5
Int. Cl. G11b 5/00; H04q 9/00
U.S. Cl. 340—162 14 Claims



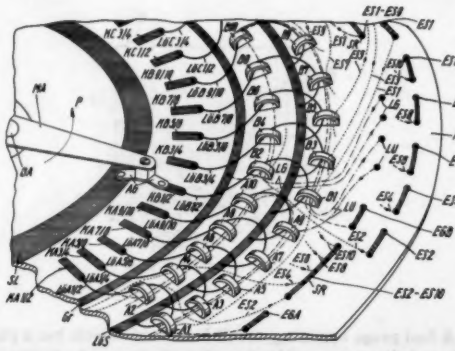
A system for selectively retrieving one of a plurality of articles, such as record disks in an automatic phonograph, has logic gates, a memory and related functional components readily suited for metal-oxide-semiconductor construction.

3,739,343

MEMORY MAGNET CONTROLS FOR A MACHINE WHICH AUTOMATICALLY CHANGES RECORDS

Heinrich Meyer, Haldem, Germany, assignor to Wilhelm Harting Werk fur Elektro-tecknik und Mechanik, Espeklamp, Germany

Filed Feb. 29, 1972, Ser. No. 230,289
Claims priority, application Germany, Mar. 1, 1971, P 21 09 540.9
Int. Cl. H04q 3/00
U.S. Cl. 340—162 R 5 Claims



A control arrangement for a machine which automatically changes disc records. The structure for controlling the sequence in which the records are played, in accordance with selections which are preliminarily made, includes two rows of apertured memory magnets directed to an electrical selecting mechanism so that through the latter information in accordance with the records selected is introduced into the memory magnets. The memory magnets in one row are respectively aligned with the memory magnets in the other row to form therewith pairs of aligned magnets which respectively correspond to the opposite sides of a given record. A signal-extinguishing conductor extends through each pair of

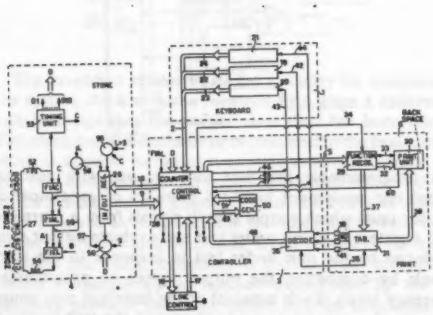
aligned memory magnets, has one end connected to one electrical contact and has an opposed end connected to a collecting conductor which is common to all of the opposed ends of all of the signal-extinguishing conductors. An electrically conductive slip member extends along the row of contacts to which all of the signal-extinguishing conductors are respectively connected, and a scanner is moved together with a movable record magazine along the slip member and successively along the row of contacts providing a bridge between the latter and the slip member. A read-out conductor extends through all of the memory magnets in one row which correspond respectively to one of the sides of the series of records and another read-out conductor extends through the memory magnets of the other row which respectively correspond to the other sides of the series of records in the magazine. These read-out conductors are both connected electrically to a dual read-out amplifier, and an electrical circuit is connected with the slip member, the common collector conductor, and the amplifier for providing automatic selection of a given side of a given record corresponding to a memory magnet to which a selecting signal has been transmitted to be stored therein, when the scanner bridges the contact connected to the signal-extinguishing conductor which passes through the latter memory magnet which has the selection signal and completes a circuit between the latter contact and the slip member.

3,739,344

DATA TERMINAL APPARATUS HAVING A DEVICE FOR ALIGNING PRINTED DATA

Francesco Serracchioli, Banchette, and Francesco Restivo, Cascinette, both of Italy, assignors to Ing. C Olivetti & C., S.p.A., Turin, Italy

Filed June 29, 1970, Ser. No. 50,721
Claims priority, application Italy, July 3, 1969, 52489 A/69
Int. Cl. G06f *3/12*
U.S. Cl. 340—172.5 **5 Claims**



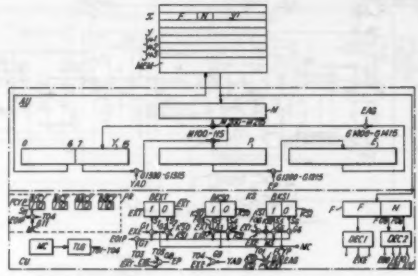
In a data terminal apparatus comprising a printing device and a keyboard, a memory divided in first and second zones is provided. The first zone stores the data characters entered on the keyboard under the control of a device causing the printing device to be backspaced one space starting from a predetermined position upon entering each character. A function key is operated after entry of the last character into the first zone to extract the characters from the first zone of the store and introduce them into the second zone of the store while simultaneously sending them to the printing device to be printed with the last entered character aligned on a predetermined columnar position.

3,739,345

MULTIPLE EXECUTE INSTRUCTION APPARATUS

Juliaan Leo Gerard Janssens, Olmen, and Mathieu Adrien Roger Peirsman, Antwerp, both of Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

Filed May 25, 1971, Ser. No. 146,720
Claims priority, application Netherlands, May 27, 1970, 7007615
Int. Cl. G06f *9/20*
U.S. Cl. 340—172.5 **4 Claims**



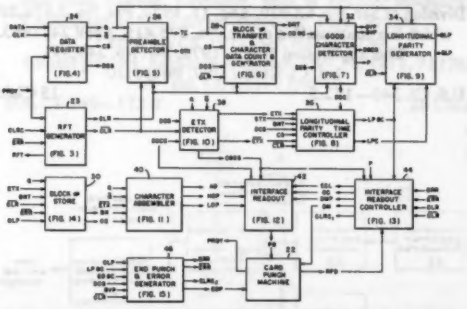
This data processing system has a memory with multiple execute instruction words stored therein. Each of these words contains the number of instructions included in a sequence of instructions to be executed and the address of the first instruction of the sequence. This type instruction word has the advantages of speed and memory space economy with only a limited increase in additional hardware.

3,739,346

DATA TRANSMISSION SYSTEM

John R. Copeland, and James F. Reid, both of Columbus, Ohio, assignors to The Great Atlantic & Pacific Tea Company, New York, N.Y.

Filed Sept. 23, 1971, Ser. No. 183,183
Int. Cl. G06f *3/04*
U.S. Cl. 340—172.5 **21 Claims**



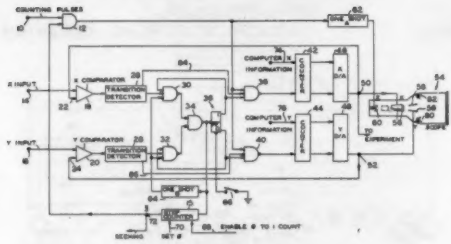
Systems are disclosed for use in producing punched cards, indicative of subjects and characteristics of subjects defined in a succession of digital signal groups. In a preferred application of the invention, the signal groups define subjects comprising ordered grocery items and subject characteristics comprising the quantity of the item required. The signal groups are conditioned for transmission by telephone lines, are regenerated after transmission and are processed in a manner effective for operating a card punch machine having the capability of punching multiple card columns at one time. The regenerated signal processing is also effective to arrange subject and characteristic information applied to the card punch machine in a manner providing increased information content in the punched card, thereby enabling efficient warehouse operations.

3,739,347

CURSOR FOR USE IN PERFORMING GRAPHIC INPUT IN A DISPLAY

Charles A. Forsberg, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Mar. 20, 1970, Ser. No. 21,400
Int. Cl. G05b 1/06, 19/30; G06f 3/14
U.S. Cl. 340—172.5 15 Claims



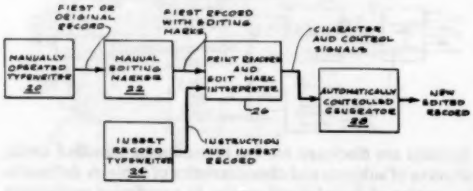
A pair of counter-registers are employed at a computer terminal for the reception of x and y coordinate information from a remote computer, and digital to analog converter means transform the register contents into deflection voltages for a cathode ray storage tube. A cursor display employs the same counter-registers, applying a series of impulses to such registers until the corresponding digital to analog converter outputs equal analog cursor inputs. The registers operate alternately and produce a large, cross-shaped cursor intersecting at the point of interest. The counter-registers can be stopped subsequent to comparison, and will then store digital information representing the coordinate address of the cursor intersection for introduction into the computer.

3,739,348

AUTOMATIC EDITING METHOD

Ron Manly, 1922 West Segundo Boulevard, Gardena, Calif.

Division of Ser. No. 63,020, Aug. 11, 1970, Pat. No. 3,676,856, which is a continuation of Ser. No. 275,415, April 24, 1963. This application May 1, 1972, Ser. No. 249,391
Int. Cl. G06f 11/00; B41j 5/30
U.S. Cl. 340—172.5 15 Claims



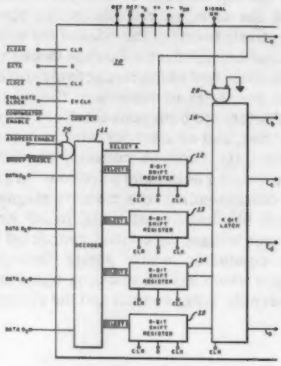
Methods and systems to avoid manually retyping or rekeyboarding textual material when revising or correcting the information contained in a record either while originally preparing the information or at a later date. The use of print readers or character recognition device to accomplish this "editing" is disclosed, as well as editing using paper tape typewirters, display devices, and other means such as using editing instructions. Methods are also disclosed for automatically reformatting the information into lines after insertions, deletions or other changes requiring shifting of the line layout of the information.

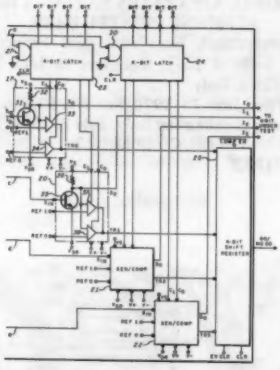
3,739,349

DIGITAL EQUIPMENT INTERFACE UNIT

William M. Burdette, Jr., Largo, and David C. Davis, Jr., Clearwater, both of Fla., assignors to Sperry Rand Corporation, New York, N.Y.

Filed May 24, 1971, Ser. No. 146,263
Int. Cl. G01r 31/00
U.S. Cl. 340—172.5 9 Claims





A programmable interface unit for use with automatic digital test equipment having a plurality of generator/comparator units which couple stimuli signals from a plurality of shift registers to a unit under test and evaluate output signals produced by the unit under test in response to the stimuli signals by comparing the output signals to programmable reference levels. Each terminal of the interface unit coupled between the generator/comparators and the unit under test may be employed alternately by appropriate programming to function as either a stimuli output to the unit under test or as an input to a comparator of an output signal produced by the unit under test.

3,739,350

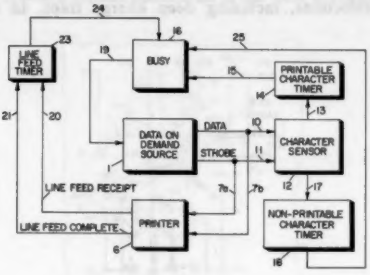
HIGH-SPEED DATA PROCESSING SYSTEM

Paul J. Moran, Waynesboro, Va., assignor to General Electric Company, Waynesboro, Va.

Filed Sept. 24, 1971, Ser. No. 183,525
Int. Cl. G06f 3/12
U.S. Cl. 340—172.5 16 Claims

Increasing the through-put rate of data processing in an electronic printer by accepting incoming data at a rate which

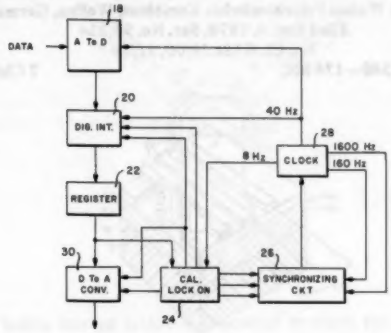
is a function of the variable print density of the incoming data being received.



3,739,351
PHASE CONTROL CIRCUITS

Donald F. Forbes, Oakton, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 22, 1972, Ser. No. 228,186
Int. Cl. H04n 1/36; H04l 7/00
U.S. Cl. 340—172.5 **1 Claim**



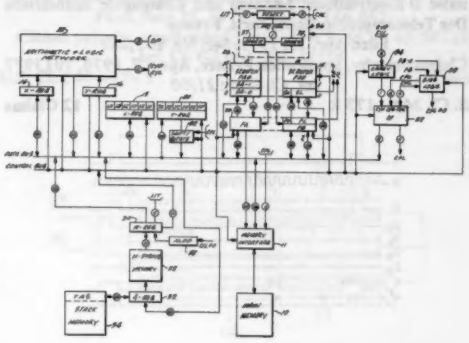
The invention relates to digital circuitry for synchronizing the system clock with the received data when a calibrate circuit indicates that the proper clear data has been received. The clock control operates in two modes. In the first mode the clock is allowed to run at a predetermined frequency at the end of a data frame (reset pulse). The clock is allowed to run at the predetermined frequency until the calibrate signal has been received as clear data and an indication to track is given by the calibrate clock on circuit. Upon receipt of the track indication the clock frequency is shifted from the predetermined frequency by an amount determined by the delay clocking between the clock pulses and the indication of all zero's indication calibrate pulse by the calibrate lock on circuit. The same shift in duty cycle is maintained through out each frame. Thus, the synchronizing circuit causes the clock to hunt about while locked on the received data. Thereby tracking the received data.

3,739,352
VARIABLE WORD WIDTH PROCESSOR CONTROL

Roger E. Packard, Santa Barbara, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed June 28, 1971, Ser. No. 157,297
Int. Cl. G06f 9/00
U.S. Cl. 340—172.5 **21 Claims**

There is described a microprogrammed processor associated with a free field memory in which operands of any length in terms of the number of bits can be processed. The free field memory is addressed by an address register that points to the boundary between any two bits stored in the memory as the start of a field and that specifies the number of bits in the field up to the maximum bit capacity of the memory. A control register, referred to as a bias register, determines the number of bits in parallel, up to a maximum number of parallel bits accommodated by one memory cycle, required in the execution of particular microinstructions. Any

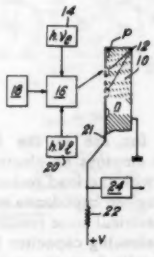


microoperator string involving the manipulation of operands, such as an arithmetic operation or a data transfer operation, includes a bias operation in which the bias register is set to the lesser of the number of bits specified by the address register and the maximum number of bits transferred in one memory cycle. Once the bias register is set, it is used to control internal operations within the processor and transfers between the processor and memory as though the basic width of the machine had been changed.

3,739,353
OPTICAL-ACCESS MEMORY DEVICE FOR NON-DESTRUCTIVE READING

Gunnar Bjorklund, Tyreso, Sweden; Joseph Borel, Echirolles, and Jean Marine, Grenoble, both of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed May 9, 1972, Ser. No. 251,739
Claims priority, application France, May 14, 1971, 7117637
Int. Cl. G11c 11/40
U.S. Cl. 340—173 R **20 Claims**



The memory device permits storage of a high density of information in binary form and comprises a p or n-type semiconductor substrate having a forbidden band *Eg* and two intermediate levels, the lower level being located at an energy *Ep* from the top of the valence band and the upper level at an energy *Ee* from the bottom of the conduction band, an array of memory cores distributed over the surface of the substrate, writing means for selectively populating the two intermediate core levels with majority carriers from the valence band, opti-

cal means for selectively illuminating the memory cores with photons of energy greater than the energy *Ei* between the two intermedaite levels, means for detecting the reaction of each memory core when this latter is illuminated by the optical means.

3,739,354

VARIABLE CAPACITY MEMORY

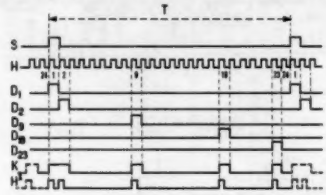
Guy LeRoy, Lannion, France, assignor to Societe Lannionnaise D'Electronique, Lannion and Compagnie Industrielle Des Telecommunications, Paris, France

Filed Apr. 19, 1971, Ser. No. 135,248

Claims priority, application France, Apr. 17, 1970, 7013977

Int. Cl. G11c *21/00*

U.S. Cl. 340—173 R **12 Claims**



The device according to the invention comprises essentially a memory M having a useful capacity n which is lower than N, N representing the number of words contained in a frame T of a pulse code modulation system, and an advance clock of the said memory, supplying pulses H^z according to a certain distribution arrangement in time of the frame, based on a fixed period clock H.

3,739,355

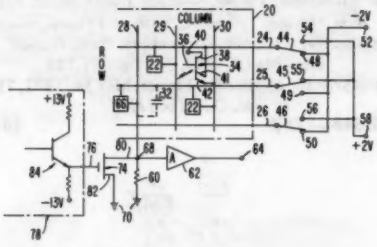
SENSE AMPLIFIER FOR HIGH SPEED MEMORY

Arthur J. Radcliffe, Jr., Plymouth, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 28, 1971, Ser. No. 147,894

Int. Cl. G11c *7/02*; C11c *11/40*

U.S. Cl. 340—173 R **14 Claims**



A sense amplifier for use in the interrogation of a phototransistor matrix employs an electronically controlled impedance in parallel with the load resistor of each column. The electronically controlled impedance substantially reduces the time constant of electrical noise resulting from row selection. Additionally, a balancing capacitor functions to cancel the transient which results from the switching of the controlled impedance.

3,739,356

HETEROJUNCTION INFORMATION STORAGE UNIT

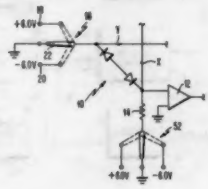
Wilber David Pricer, Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 21, 1971, Ser. No. 155,031

Int. Cl. G11c *11/36, 5/02*

U.S. Cl. 340—173 R **13 Claims**

A bistable information storage unit which has a semiconductor device having two P–N heterojunctions arranged in opposing series relation. The heterojunctions each exhibit stable high and low impedance states due to a high density of material imperfections, including deep energy traps. In normal



operation, the order of the impedance states of the heterojunctions of the device can be sensed and changed. The state or order of the junctions can be used to designate binary information.

3,739,357

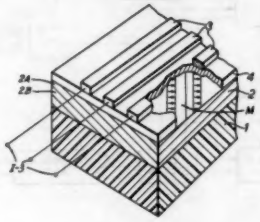
MAGNETIC SHIFT MEMORY

Reinhard Straubel, Berlin, Germany, assignor to VEB Filmfabrik Wolfen Fotochemisches Kombinat, Wolfen, Germany

Filed Dec. 4, 1970, Ser. No. 95,224

Int. Cl. G11c *19/00, 11/14*

U.S. Cl. 340—174 MC **7 Claims**



This invention relates to a magnetic shift memory for example in the form of a long ribbon, preferably endless, wherein the required raster of varying magnetic fields is provided in a permanent magnetic layer arranged adjacent to strips of magnetic material and sufficiently close thereto for causing on application of an impulse shaped current, a raster-like periodic variation of the critical switching field strength. The periodicity of the raster-like magnetization need not be constant. It may extend longitudinally and/or traversely and/or at an angle relative to the permanent magnetic layer.

3,739,358

SHIFT REGISTER OPERATING BY PROPAGATION OF DOMAINS IN THIN FILMS OF MAGNETIC MATERIAL

Claude Battarel, Magagnosc De Grasse, France, assignor to Techniques et Systemes Informatiques, Courbevoie, France

Filed Jan. 12, 1972, Ser. No. 217,174

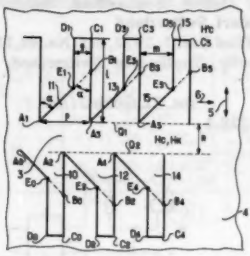
Claims priority, application France, Jan. 14, 1971, 7101174

Int. Cl. G11c *19/00, 11/14*

U.S. Cl. 340—174 MC **20 Claims**

A first zone of relatively low coercivity is surrounded by a second zone of relatively high coercivity in a thin film shift register, with the zones formed of magnetizable material, the first zone extending along the axis of relatively difficult mag-

netization and being divided from the second zone on opposite sides by first and second boundaries in the form of regular saw



teeth, with the second axis being displaced relative to the first by half the width of a saw tooth.

3,739,359

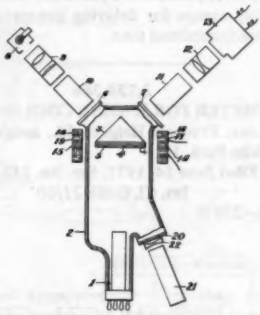
MAGNETIC BUFFER STORAGE

Robert Kerr Waring, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 25, 1971, Ser. No. 174,605

Int. Cl. G11c *11/14*

U.S. Cl. 340—174 YC **17 Claims**



A buffer storage system is described in which the storage element is composed of a magneto-opticmirror having a layer of a low-Curie temperature magnetic material on one face. Information can be read into the layer of low Curie temperature by thermomagnetic methods without disturbing previous information on the magneto-opticmirror, then transferred to the magnetooptic layer by a suitable transfer field (either a decaying oscillating field or a pulsed unidirectional field) at a predetermined time in response to trigger signals.

3,739,360

METHOD OF MAGNETIC DATA STORAGE

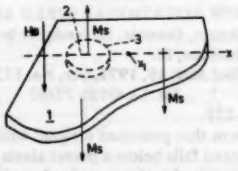
David Edward Lacklison, Crawley, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 10, 1971, Ser. No. 197,457

Claims priority, application Great Britain, Nov. 13, 1970, 54,134/70

Int. Cl. G11c *11/14*, *11/42*

U.S. Cl. 340—174 YC **6 Claims**



A method of magnetic data storage in which magnetic domains are generated and moved to desired locations in a platelet of magnetic material exhibiting photomagnetic properties, e.g., $FeBO_3$ by exposing the platelet in the desired locations to electromagnetic radiation.

3,739,361

MAGENTIC THIN FILM MEMORY PLANE

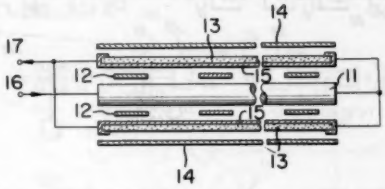
Mutsuo Ishikawa, Nagareyama; Shiro Nakagawa, Chiba, and Hiroyoshi Itoga, Ichikawa, all of Japan, assignors to TDK Electronics Corporation, Tokyo, Japan

Filed June 25, 1971, Ser. No. 156,862

Claims priority, application Japan, July 8, 1970, 45/59702

Int. Cl. G11c *11/04*, *11/14*

U.S. Cl. 340—174 S **4 Claims**



The word lines are arranged to cross the magnetic wires through which flows the digit current, and the surface in opposed relation with these word lines of the magnetic keeper which is disposed outwardly thereof, is applied with a thin electrically conductive film which is as a return line for the digit current.

3,739,362

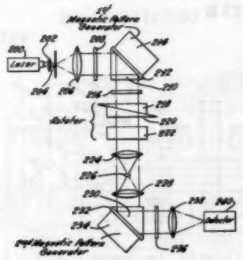
MAGNETO-OPTICAL SIGNAL PROCESSOR

Richard E. Eschelbach, Palos Verdes Peninsula, Calif., assignor to The Magnavox Company, Torrance, Calif.

Continuation of Ser. No. 700,395, Jan. 25, 1968, abandoned. This application Mar. 25, 1971, Ser. No. 128,122

Int. Cl. G11c *13/04*; G11b *11/10*

U.S. Cl. 340—174.1 M **27 Claims**



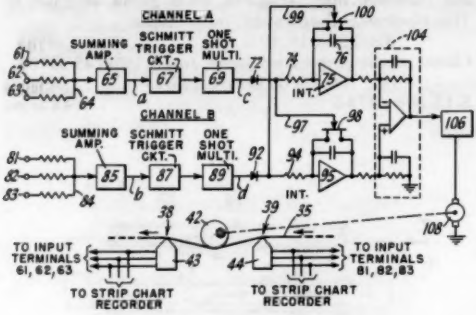
The present invention relates to the optical processing of information using a magneto-optical light modulator to spatially modulate light energy in accordance with the information. The magneto-optical light modulator includes a thin magnetic film having a spatial magnetic pattern in accordance with the information. The light energy is directed to the thin magnetic film to produce variations in the characteristics of the light energy in accordance with the spatial magnetic pattern. After the light energy has been spatially modulated the light energy is further processed using optical lenses so as to produce a desired transform of the spatially modulated light energy.

3,739,363

ADJUSTABLE TAPE PATH LENGTH

Raymond E. Carey, and Andy S. Robertson, both of Houston, Tex., assignors to AMF Incorporated, White Plains, N.Y.

Filed Apr. 17, 1972, Ser. No. 244,426
Int. Cl. G11b 15/18, 27/04
U.S. Cl. 340—174.1 L 11 Claims



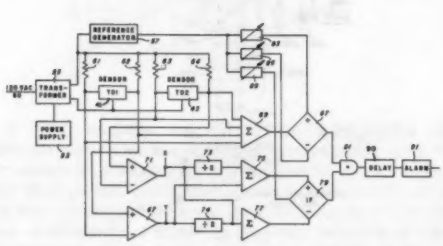
Method and apparatus for producing a multitrack inspection log of anomaly signals produced by pipeline nondestructive inspection apparatus having two longitudinally spaced sets of anomaly sensors. Inspection apparatus produces on a magnetic tape a multitrack record of anomaly signals generated by respective sensors of the two sets. Magnetic recording playback apparatus includes two spaced magnetic head stacks and means located therebetween to adjust length of path the magnetic tape travels between the head stacks. Proper adjustment of path length assures that all anomaly signals corresponding to a given anomaly that is sensed by both sets of sensors appear in transverse alignment in the respective recording tracks of the multitrack inspection log.

3,739,364

ANTENNA MAST MISALIGNMENT DETECTOR

Carl M. Talkington, and Hamli W. Cooper, both of Austin, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed June 7, 1971, Ser. No. 150,490
Int. Cl. G08b 21/00
U.S. Cl. 340—213 R 3 Claims



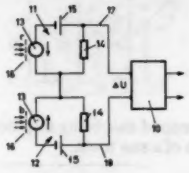
An antenna misalignment detector has two electrolytic transducers mounted on a mast carrying the antenna perpendicular to each other in the same horizontal plane. The antenna is mounted on a mast. The square root of the sum of the squares of the output from the transducers is generated and compared with a predetermined reference so that an alarm sounds when the antenna is misaligned along a vertical axis to the ground.

3,739,365

APPARATUS FOR DETECTION OF A FIRE OR OF FLAMES

Peter Muller, Oetwil, Switzerland, assignor to Cerberus AG., Mannedorf, Switzerland

Filed Dec. 1, 1970, Ser. No. 94,113
Claims priority, application Switzerland, Dec. 3, 1969, 18107/69
Int. Cl. G08b 21/00
U.S. Cl. 340—228.2 23 Claims



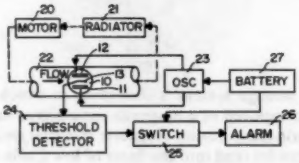
Fire detecting apparatus includes two photoelectric devices, each having different spectral sensitivities. A difference signal corresponding to the difference between the output signals of the photoelectric devices is generated and an alarm signal is developed when the difference signal deviates by a predetermined amount from a predetermined value or range of values, depending upon application. A preferred embodiment also includes a delay means for delaying generation of the alarm signal for a predetermined time.

3,739,366

FLOWMETER FOR ENGINE COOLING SYSTEM

Melvin A. Lace, Prospect Heights, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed June 14, 1971, Ser. No. 152,928
Int. Cl. G08b 21/00
U.S. Cl. 340—239 R 14 Claims



A flowmeter senses the flow rate in an engine cooling system to provide an indication of an extraordinary condition as when the water pump or one of the fluid conducting hoses would become inoperative. The flowmeter sensor comprises a pair of stationary electrodes located adjacent to and on either side of a flexible electrode which is deflected by the current flow. A relatively high frequency alternating current produces a field between the two stationary electrodes and the deflecting electrode will assume a potential based on its location in the field. A threshold detection circuit is connected to the deflecting electrode whereby a change in its apparent voltage will actuate a warning device.

3,739,367

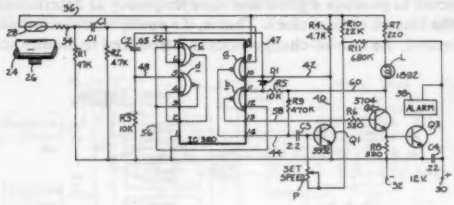
SLOW ROTATIONAL SPEED ALARM

George H. Fathauer, Decatur, Ill., assignor to Dickey-john Corporation, Chatham, Ill.

Filed Aug. 19, 1971, Ser. No. 173,138
Int. Cl. G08b 21/00
U.S. Cl. 340—271 10 Claims

A digital alarm that produces a signal when a function that is being monitored falls below a preset alarm point. The monitored function may be the speed of a shaft. Input pulses representing the function to be monitored are fed into the

device and the period of the input pulses are compared with the interval of a signal generated by a monostable multivibrator within the device. If the input signal period is greater than the multivibrator interval, the alarm sounds, but if the input

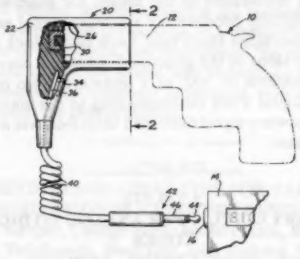


signal period is less than the multivibrator interval the alarm is off. When the alarm is driven either off or on, it is held there until the monitored function changes to the complement condition.

3,739,368
STARTER GUN ATTACHMENT

Bernard J. Stalp, Hillsboro, Oreg., assignor to Data Time, Inc., Beaverton, Oreg.

Filed Aug. 9, 1971, Ser. No. 170,199
Int. Cl. G07c 1/24
U.S. Cl. 340—323 **8 Claims**

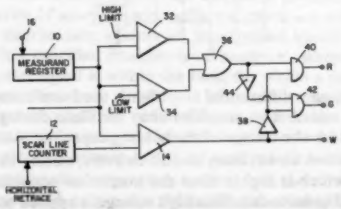


Sound-actuated apparatus for controlling an electrically operated device in response to the firing of a gun remote from the device. The apparatus includes a housing having a magnet mounted thereon for detachably securing it to a gun. A microphone, and an electrical circuit connected thereto, are mounted in the housing for detecting the firing of the gun and for producing an electrical signal at output terminals of the circuit on detecting such firing. An elongated, flexible conductor is connected at one of its ends to the output terminals of the circuit and has a plug at its other end for detachably and operatively connecting it to a remote electrically operated device.

3,739,369
HISTORICAL DATA DISPLAY

William Marvin Bunker, Ormond Beach, and Walter Hosey Tew, Jr., DeLand, both of Fla., assignors to General Electric Company, New York, N.Y.

Filed Jan. 4, 1971, Ser. No. 103,741
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A **5 Claims**

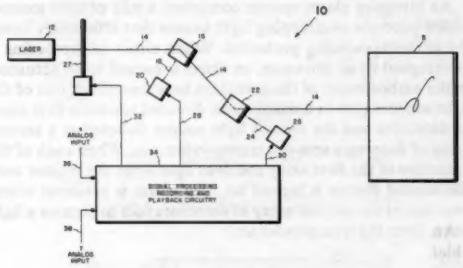


Measurements of a particular parameter are digitized and scaled. The J most recent measurands are displayed as elements on a raster type display. The I scan lines are assigned magnitudes in accordance with their vertical position. Each scan line magnitude is compared with all J elements which are clocked out of a register one by one for comparison and returned to the register. Each comparison results in a color decision and control signal for the portion of the scan line represented by that particular element. At the completion of each frame the measurand register is updated to include more recent measurands.

3,739,370
PLOTTING PROJECTOR

Hanns H. Wolff, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Int. Cl. G08b 5/36
U.S. Cl. 340—324 R **3 Claims**

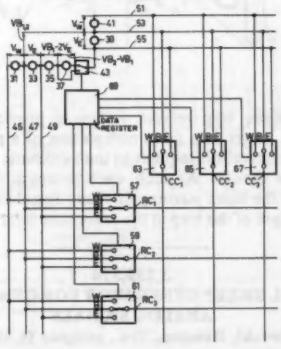


A plotting projector wherein analog signals are periodically sampled, converted to pulse position word form and recorded for repeated playback and demodulation to provide beam deflection signals for describing a periodically updated trace at a repetition rate above the flicker rate.

3,739,371
CROSS ADDRESSED BISTABLE DISPLAY PANEL WITH SELECTABLE BILEVEL SUSTAINING BIAS CIRCUIT

Michael George Hulyer, Croydon, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 2, 1970, Ser. No. 86,147
Claims priority, application Great Britain, Oct. 31, 1969, 53,603/69
Int. Cl. G11c 7/00
U.S. Cl. 340—324 **3 Claims**

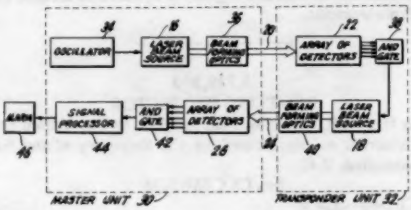


In a cross point display matrix of the storage type means are provided for shifting the common bias voltage to different levels during the write and erase operations. Shifting of the bias voltage permits the application of higher amplitude addressing pulses for both the write and erase operations.

3,739,372
OPTICAL INTRUSION ALARM SYSTEM

Gabor Schlisser, Tenafly, and Julius R. Insler, Bergenfield, both of N.J., assignors to Holobeam, Inc., Paramus, N.J.

Filed Oct. 27, 1971, Ser. No. 192,926
Int. Cl. G08b 13/18
U.S. Cl. 340—258 B 5 Claims

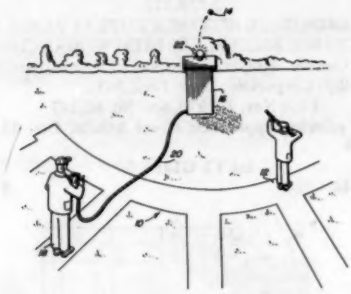


An intrusion alarm system comprises a pair of light sources which produce overlapping light beams that effectively cover the entire area being protected. When either of the beams is interrupted by an intrusion, an alarm is caused to be actuated. In the embodiment of the invention here described, one of the light sources acts as a master unit directed toward a first array of detectors and the second light source directed at a second array of detectors acts as a transponder unit. When each of the detectors in the first array receives light from the master unit, the second source is turned on. The alarm is actuated whenever one of the second array of detectors fails to receive a light beam from the transponder unit.

3,739,373
TIMER CONTROL FOR TRAP RELEASE

Eugene H. Liming, Box 455, Ocfola, Ohio, and Robert E. Heffelfinger, 916 Monnett St., Cucyrus, Ohio

Filed Jan. 7, 1972, Ser. No. 216,208
Int. Cl. G08b 5/00
U.S. Cl. 340—309.1 R 13 Claims



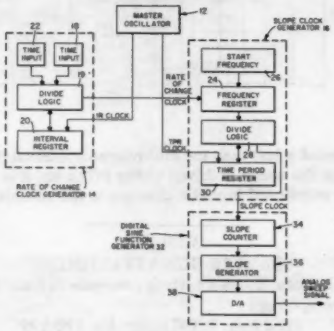
An automatic trap release system is provided for timed release of a target trap upon completion of a predetermined time delay interval subsequent to the automatic actuation of a signal to the shooter. As such, each competitive shooter will be afforded the same warning or ready signal followed by automatic release of the trap in the same time interval thereafter.

3,739,374
DIGITAL SWEEP GENERATOR FOR GENERATING ANALOG SIGNALS

John W. Klowski, Houston, Tex., assignor to Mandrel Industries, Inc., Houston, Tex.

Filed Aug. 27, 1971, Ser. No. 175,472
Int. Cl. H03b 23/00
U.S. Cl. 340—347 DA 11 Claims

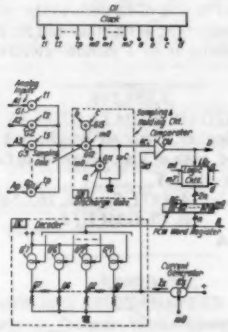
A digital sweep generator for digitally generating an analog since wave signal of constant or varying (sweep) frequency, includes means for generating a rate-of-change clock, a slope clock and a sine function, via digital circuits. The rate-of-change clock determines the rate-of-change in the frequency of a sinewave across a desired range of frequencies for a given time interval. The slope clock occurs at the exact increments selected to produce a given sinewave frequency as determined by the rate-of-change clock. That is, if a sweep sinewave signal is desired, the rate-of-change clock is introduced to modify accordingly the means for generating the slope clock. The slope clock is then introduced to the means for generating a sine function to digitally produce the sinewave signal as the function of the input slope clock rate. Each slope clock represents a point on the slope of the generated sinewave, corresponding to equal increments of 360° of a sinewave. Two outputs are provided; a digital word corresponding to the sinewave, and the analog sinewave signal delivered therefrom via a digital-to-analog converter.



3,739,375
AUXILIARY CIRCUIT FOR ANALOG TO DIGITAL CODER

Andre Edouard Joseph Chatelon, Montrouge, and Marc Andre Regnier, Aulnay-sous-Bois, both of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 10, 1969, Ser. No. 815,016
Claims priority, application France, Apr. 24, 1968, 68149222
Int. Cl. H03k 13/02
U.S. Cl. 340—347 CC 5 Claims

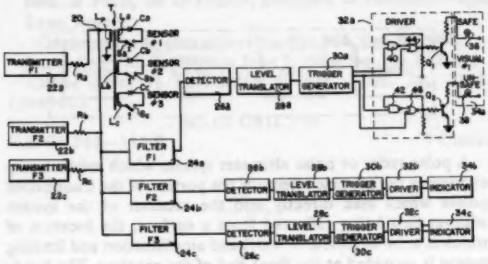


A high-gain differential amplifier is used as a comparator in a PCM coder. The amplifier may oscillate during the time reserved for the charge of the holding capacitor. According to the invention an auxiliary circuit delivers, during that time, a voltage which is higher than the maximum possible value of the signal to be coded. This high voltage is applied to the comparator in order to block it.

3,739,376
REMOTE MONITOR AND INDICATING SYSTEM

Francis C. Keledy, Butler, N.J., assignor to Trodyne Corporation, Teterboro, N.J.

Filed Oct. 12, 1970, Ser. No. 79,797
Int. Cl. G08b 1/08
U.S. Cl. 340—416 11 Claims

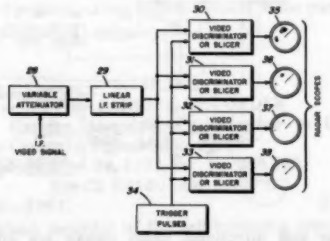


A passive parameter-sensing element is disposed at a location remote from an indicator. Upon the occurrence of a predetermined variation in the sensed parameter, an active unit coupled to the passive element produces a signal which operates the indicator. In one embodiment of the invention a plurality of passive sensing elements are housed in the blades of a helicopter. Upon the sensing of a change in the air pressure in one of the blades, the response of the passive element in that blade causes the active unit to produce a signal which has a characteristic uniquely associated with the particular blade in which the failure occurs.

3,739,377
METHOD AND APPARATUS FOR TARGET DISCRIMINATION IN A CLUTTER ENVIRONMENT

Robert A. Kropfli, College Park; Isadore Katz, Bethesda; Kenneth F. Tritabaugh, Rockville, and Richard M. Beard, Silvers Spring, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 17, 1967, Ser. No. 676,678
Int. Cl. G01s 9/02
U.S. Cl. 343—5 R 9 Claims

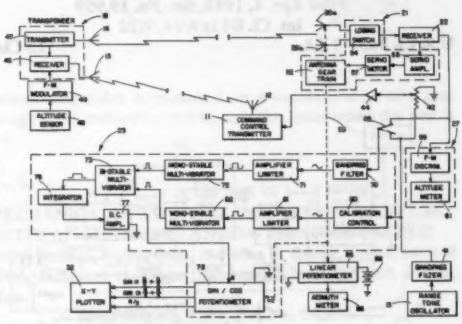


A method and apparatus for improved detection of radar targets in a clutter environment are disclosed. Basically, a plurality or series of so-called video slicer circuits are selectively preset to discriminate against all input video signals except those within a specified intensity level band; i.e., whenever the received radar signal is within the band for which a particular slicer is set, this slicer provides a constant voltage output signal, whereas, when the radar video is outside the band, a zero output voltage results. Inasmuch as the radar returns from a target will remain within at least one intensity level band for measurably longer time interval than the surrounding clutter, improved target discrimination is accomplished by sensing the time interval during which the radar returns remains within each preset level band and in this manner all clutter outside the preset intensity level band is effectively eliminated. Various methods of processing the slicer output information are also disclosed. For example, in one method, a separate radar scope display is connected to the output of each video slicer; whereas, in two other proposed methods, the video slicer outputs provide automatic discrimination of targets on the basis of intensity fluctuations.

3,739,378
RADIO TRACKING SYSTEM

Richard A. Botzum, Chania, and Donald W. Peck, Newbury Park, both of Calif., assignors to Northrop Corporation, Los Angeles, Calif.

Filed June 14, 1971, Ser. No. 152,765
Int. Cl. G01s 7/04, 9/06
U.S. Cl. 343—6.5 R 9 Claims

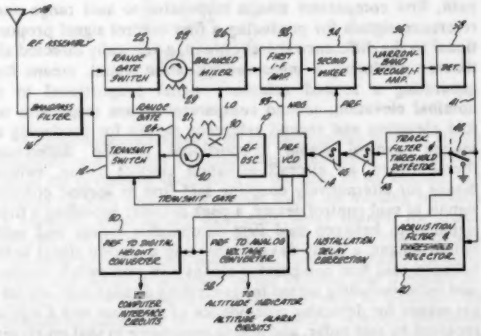


A tracking system suitable for tracking a targter and that received by the receiver. The azimuth of the target is determined by means of a servo-control system which automatically locks the receiver antenna onto the target. Signals in accordance with target range and azimuth are processed in a position computer, the output of which is fed to an X-Y plotter which provides a continuous positional plot of the target.

3,739,379
COHERENT PULSE DOPPLER ALTIMETER

Donovan C. Davis, Pasadena, Calif., assignor to Hoffman Electronics Corporation, El Monte, Calif.

Filed Feb. 3, 1971, Ser. No. 112,295
Int. Cl. G01s 9/10, 9/16
U.S. Cl. 343—7.3 12 Claims



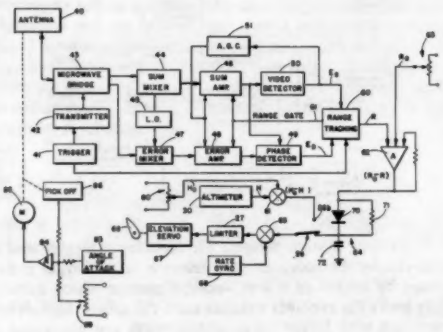
A coherent pulse doppler altimeter system employing a single antenna wherein the transmit signal is a generated series of pulses the pulse width and repetition frequency of which are varied keeping the average power high although

peak transmitter power can be low enough to permit utilization of all solid state components. The ground return pulse will have a doppler shift caused by the vertical component of the aircraft velocity and a doppler spread due to the horizontal velocity. The receiver is tuned to receive the first side band of the return signal. The receiver is range gated by a gate pulse which is varied as the pulse repetition frequency (PRF) is varied so that just the leading edge of a return pulse passes through the gate. Variations in PRF are controlled by the tracking of that leading edge by the range gate. The PRF is then counted to give altitude.

3,739,380
SLANT RANGE TRACKING TERRAIN AVOIDANCE SYSTEM

William S. Burdic, Yorba Linda, and Robert O. Case, Jr., La Habra, both of Calif., assignors to North American Aviation, Inc.

Filed Apr. 4, 1960, Ser. No. 19,959
Int. Cl. G01s *9/14, 9/22*
U.S. Cl. 343—7 TA **13 Claims**

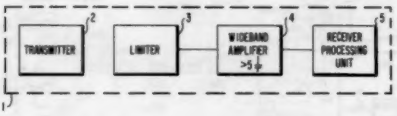


11. In combination with an aircraft, a slant range tracking monopulse radar on said aircraft for producing a range signal proportional to slant range to ground along a boresight axis extending forward of said aircraft at a relatively small depression angle, said radar including an antenna defining said boresight axis, means for sensing angle of attack of said aircraft, means responsive to said sensing means for stabilizing said antenna relative to the flight path of said aircraft, means for generating a reference signal proportional to nominal slant range to a point at a predetermined distance below said flight path, first comparator means responsive to said range and reference signals for producing a first control signal proportional to the difference therebetween, a vertically directed altimeter producing a measured elevation signal, means for generating a second reference signal proportional to a nominal elevation, second comparator means responsive to said elevation and second reference signals for producing a second control signal proportional to the difference therebetween, an aircraft elevation control divice, switch means for alternatively coupling said first or second control signals to said control device, a peak rectifier providing a first signal path between said first comparator means and said switch means, a delay device providing a second signal path between said first comparator means and said switch means, said radar including means for generating a range gate, on-target means for detecting coincidence of said gate and a signal received by said radar, and means responsive to said on-target means for operating said switch means to couple said first control signal to said control device when said coincidence is detected and to couple said second control signal to said control device when said coincidence is absent.

3,739,381
PULSE RADAR AND ALTIMETER SYSTEM WITH IMPROVED CLOSE-IN RESPONSE

William K. Saunders, 8505 Seven Lock Road, Bethesda, Md.

Filed Jan. 28, 1972, Ser. No. 221,716
Int. Cl. G01s *9/06*
U.S. Cl. 343—13 R **11 Claims**

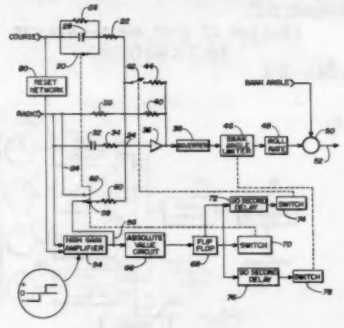


A pulse radar or pulse altimeter system which substantially eliminates the adverse effects of the portion of the transmitted pulses which leak directly into the receiver of the system without first being reflected from a surface, the location of which is to be detected. A wideband amplification and limiting means is provided at the front end of the receiver. The bandwidth of the amplification and limiting means is at least 5 times $1/\tau$ where τ is the duration of the pulses emitted by the transmitter to ensure that the leakage pulses are rapidly cleared out of the receiver circuitry so as not to obscure signals reflected from close-in surfaces. The amplification and limiting means linearly amplifies pulse signals reflected form desired surfaces but limits the much greater leakage pulse signal so that both leakage and signal pulses are presented to the receiver processing circuitry at the same order of magnitude.

3,739,382
AIRCRAFT LATERAL GUIDANCE SYSTEM

James R. Younkin, Mineral Wells, Tex., assignor to Mitchell Industries, Inc., Mineral Wells, Palo Pinto County, Tex.

Filed Sept. 8, 1970, Ser. No. 70,250
Int. Cl. G01s *1/16*
U.S. Cl. 343—107 **19 Claims**



Course and directional radio signals are combined to produce an aircraft guidance signal. The guidance signal is amplified and applied to control the intercept of the aircraft with a directional radio beam. Circuitry is provided which is responsive to the radio signal for decreasing the aircraft angle of intercept to a preset minimum intercept angle as the aircraft approaches the radio beam. Upon intercept with the radio beam, the minimum intercept angle is reduced and the aircraft is directed along the radio beam. Also upon intercept with the radio beam, a cross wind correction is applied to the guidance signal. After a first preselected time interval from the intercept with the radio beam, the gain of the guidance signal is substantially reduced to provide a more comfortable flight, After a second predetermined time interval from intercept with the radio beam, the permissible bank angle of the

aircraft is limited. A novel nonlinear circuit is provided in a feedback circuit to nonlinearly control the roll motor of the aircraft.

3,739,383

HYBRID NAVIGATION SYSTEM

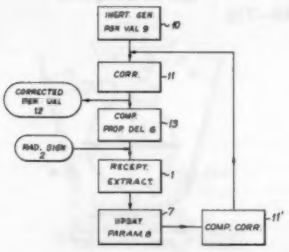
Gilbert Perot, Versailles; Emile Labin, and Miguel Da Silveira, both of Paris, all of France, assignors to Pechiney-Progil, Lyon, France

Continuation-in-part of Ser. No. 402,966, Oct. 9, 1964, abandoned. This application June 5, 1969, Ser. No. 832,554

Claims priority, application France, Sept. 28, 1963, 63949002

Int. Cl. G01s *5/00*

U.S. Cl. 343—112 R **7 Claims**



A hybrid navigation system including an inertial navigation system on a vehicle to be located and a time base signal generator and a receiver on the vehicle. The receiver is coupled to the generator and adapted to receive incoming location signals transmitted from remote stations. Phase differences are determined between the location signals and reference signals generated by the generator. A computer computes on the basis of an error formula and from data received from the inertial navigation system, the reference signals and the phase differences, a correction of position issuing from the inertial system and a corrected position. The computer also computes, from the corrected position, values of the phases of the reference signals corresponding to those which would have been received if the corrected position were true. The time base means is responsive to said values and controls the receiver, computer and determination of phase differences. The computer computes from the phase differences and position values updated values of the parameters of the error formula.

3,739,384

SELF-BALANCING RECORDER

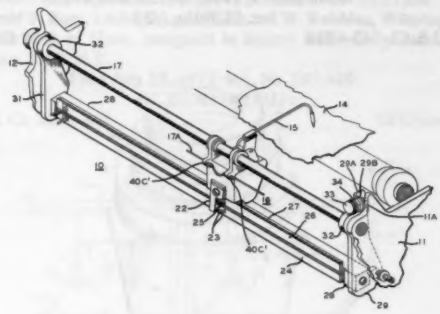
Samuel J. Harkins, Lansdale, Pa., assignor to Leeds & Northrup Company, Philadelphia, Pa.

Filed Mar. 20, 1972, Ser. No. 236,242

Int. Cl. G01d *15/00, 13/00*

U.S. Cl. 346—139 C **21 Claims**

A strip chart recorder of the self-balancing type characterized by a novel index mounting, pen assembly, and linear slidewire assembly which is movable about a guide shaft for the pen assembly. The pen assembly is comprised of a molded plastic body having a cavity forming an inkwell, integral mounting structure for releasably supporting and precisely positioning a pen in the well, and integral upstanding ears supporting bearings which cooperate with a guide shaft for the pen assembly. The molded plastic body additionally supports electrical contacts of spring material which engage the slidewire and trolley of the movable slidewire assembly and supply pressure for biasing the pen into engagement with the recorder chart. The slidewire contact and pen pressures are simultaneously adjusted by setting the position of the movable slidewire assembly. Means may also be provided for separate adjustment of the pen pressure. The pen assembly additionally has a part cooperating with a portion of the slidewire assembly so that the pen may be lifted regardless of its position across the chart when the slidewire assembly is swung to a pen lift



position. The index is mounted on a separate loop of a pen carriage drive cable to avoid tipping the index when the pen is lifted.

3,739,385

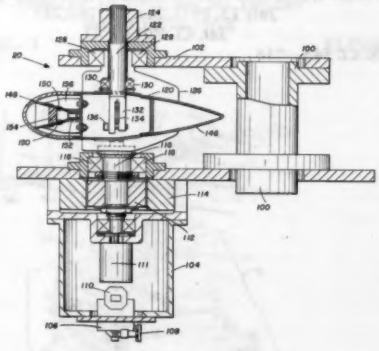
MECHANICALLY SWEPT RADAR ANTENNA FOR USE WITH AN AIRCRAFT LANDING MONITOR SYSTEM

Bartow Bechtel, Richardson, and Max B. Green, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed July 15, 1970, Ser. No. 54,990

Int. Cl. H01q *1/28, 3/06, 13/02*

U.S. Cl. 343—705 **18 Claims**



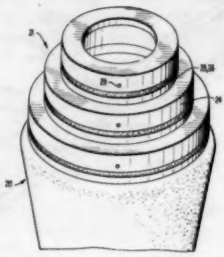
A radar antenna for use in an aircraft landing monitor which includes an elongated antenna housing mounted on a vertical pivot for horizontal oscillation in the nose of an aircraft. An elongated horn reflector mounted along the housing supports a resonant edge-slotted waveguide array therein for transmitting and receiving radar signals with a radar beam pattern narrower in the azimuth than in the elevation plane. An elongated bar spring is mounted in the housing and is rigidly attached to the vertical pivot in order to tend to maintain the desired oscillation of the antenna housing. A motor oscillates the antenna housing about the vertical pivot to sweep the radar beam over a predetermined azimuth angle. Circuitry is provided to sense the position of the antenna housing and for maintaining the antenna sweep at the predetermined azimuth angle and rate.

3,739,386

BASE MOUNTED RE-ENTRY VEHICLE ANTENNA

Howard S. Jones, Jr., Washington, D.C., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 1, 1972, Ser. No. 230,672
Int. Cl. H01q 1/28
U.S. Cl. 343—708 10 Claims



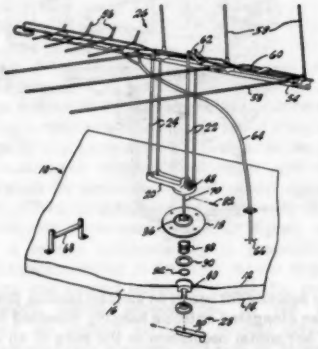
A space projectile such as a re-entry vehicle having an antenna comprising a plurality of concentric ring radiating elements at its base. Each radiating element is a plated dielectric loaded cavity having a circumferential radiating slot which extends around the greater part of the circumference of the element. The elements may be either rectangular or L-shaped in cross-section and may be excited out of phase with each other to produce a desired radiation pattern.

3,739,387

DUAL PURPOSE ANTENNA CONTROL

Jack C. Budrow, and Glenn A. Reed, both of Battle Creek, Mich., assignors to Barker Manufacturing Company, Inc., Battle Creek, Mich.

Continuation-in-part of Ser. No. 59,604, July 30, 1970, Pat. No. 3,665,477, which is a continuation-in-part of Ser. No. 789,834, Jan. 8, 1969, Pat. No. 3,587,104. This application July 13, 1971, Ser. No. 162,241
Int. Cl. H01q 1/32
U.S. Cl. 343—714 8 Claims



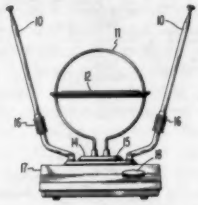
The invention pertains to an antenna, such as a television antenna, particularly suitable for use with recreational vehicles wherein the signal-receiving components may be elevated to a signal-receiving position, or retracted to a position adjacent the recreational vehicle roof for traveling. The signal-receiving components are mounted upon a linkage which pivots about horizontal axes, and a worm wheel is employed to pivot the linkages about their associated axes. A vertically disposed rotatable shaft mounted upon a rotatable base member includes a worm gear meshing with the linkage worm wheel, and the shaft is rotatable from within the recreational vehicle interior. The shaft is additionally capable of axial movement whereby the shaft may be keyed to the base member wherein rotation of the shaft directly rotates the base member. A crank handle is mounted to the shaft for producing rotation thereof wherein rotation of the crank selectively raises and lowers the signal-receiving components or rotates the base member and signal-receiving components for directional purposes, the dual function being provided by a single crank handle.

3,739,388

ANTENNA STRUCTURES

John David Callaghan, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 16, 1971, Ser. No. 171,868
Int. Cl. H01q 3/02
U.S. Cl. 343—726 8 Claims



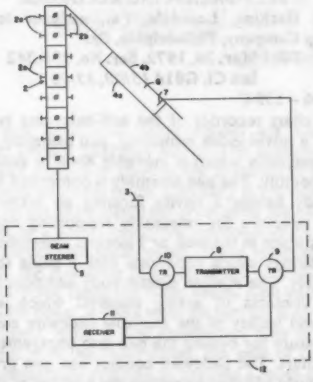
There is disclosed an antenna structure utilizing a loop having an annular ring coupled thereto and lying in a substantially horizontal plane transverse to the plane of the loop. The ring has reflector and director elements mounted thereon, and on opposite sides of the ring to offer increased directivity to the structure. A pair of dipoles are also utilized in the antenna structure. The dipoles are mounted on a first rotatable base assembly and the loop is mounted on a second rotatable base assembly. These base assemblies are rotatable with respect to a fixed base member and are controlled in rotation by means of a knob to permit azimuth orientation of the antennas.

3,739,389

DUAL FUNCTION FEED SYSTEM FOR PHASED-ARRAY RADAR

David F. Bowman, Moorestown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 2, 1972, Ser. No. 259,323
Int. Cl. H01q 3/26
U.S. Cl. 343—729 4 Claims



Both a fan and a pencil beam are derived from a single compact radar antenna. The pencil beam is derived from a first r-f

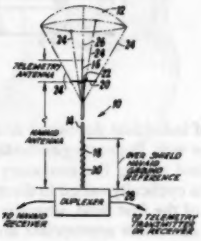
source feeding the whole array, and the fan beam is derived from a horn feeding a portion of the array. The source for the pencil beam is reflected from two parallel reflectors onto the array. The reflectors are inclined to the array and have sidewalls between them defining a single-tapered horn. This horn is fed from a second r-f source to feed a fan beam onto the array.

3,739,390

DUPLEXED ANTENNA FOR RETRANSMISSION DEVICES

Martin C. Poppe, Jr., Stoney Brook, and Leon M. Masoian, West Sayville, both of N.Y., assignors to Beukers Laboratories, Inc., Hauppauge, N.Y.

Filed Dec. 14, 1970, Ser. No. 97,674
Int. Cl. H01q *1/00*
U.S. Cl. 343—729 **2 Claims**



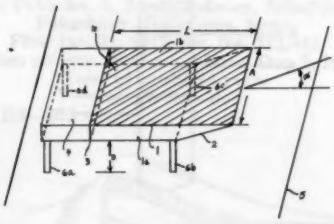
A dual antenna system formed on a common structure includes two antennas operating within different frequency ranges. In one embodiment of the invention the central conductor of a coaxial line defines the receiving element of one antenna and the shield of the coaxial line is employed as the receiving element of the second antenna. A ground plane for the first antenna is coupled to the coaxial shield. In a second embodiment of the invention the central conductor of the coaxial line is electrically divided to serve as the receiving element of both antennas, and the shield of the coaxial line forms a part of the ground element of one of the antennas. Duplexing circuitry connected to the antenna separates the signals received at the two antennas and applied the separated signals to the appropriate receiver or transmitter.

3,739,391

METALLIZED CHANNEL GUIDE ANTENNA

William G. Mavroides, Ipswich, and Robert J. Mailloux, Wayland, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed June 12, 1972, Ser. No. 261,765
Int. Cl. H01q *13/00*
U.S. Cl. 343—785 **5 Claims**



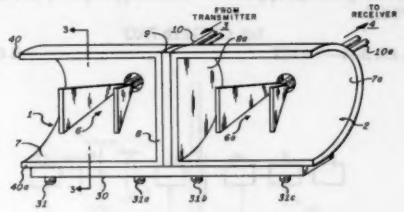
A metallized channel guide antenna is utilized for providing coverage in a sector near the horizon. The antenna has a dielectric slab with metallized sides and bottom forming a waveguide. The waveguide is mounted a fixed distance above a cylindrical ground plane and in combination therewith results in coverage at the horizon.

3,739,392

BASE-BAND RADIATION AND RECEPTION SYSTEM

Gerald F. Ross, Lexington, and Kenneth W. Robbins, Wilmington, both of Mass., assignors to Sperry Rand Corporation, New York, N.Y.

Filed July 29, 1971, Ser. No. 167,400
Int. Cl. H01q *19/12*
U.S. Cl. 343—840 **10 Claims**



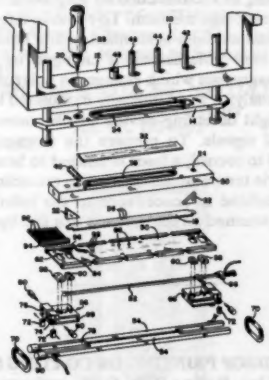
A base-band transmitter and receiver antenna system for operation in subnanosecond pulse radio systems of the type detecting the presence or range of near-by reflecting objects utilizes directive, dispersionless, broad band traveling wave transmission line radiator and receiver antenna elements arranged cooperatively to limit the effect of base-band energy directly coupled from the transmitter to the receiver.

3,739,393

APPARATUS AND METHOD FOR GENERATION OF DROPS USING BENDING WAVES

Richard H. Lyon, Belmont, Mass., and John A. Robertson, Chillicothe, Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Oct. 14, 1971, Ser. No. 189,297
Int. Cl. G01d *15/18*
U.S. Cl. 346—1 **12 Claims**



Apparatus and method for generating drops in a continuous falling curtain by controlled stimulation of a set of fluid streams. The streams are formed by forcing a working fluid under pressure through a set of orifices in an orifice plate, and are stimulated to produce drops by propagating a series of bending waves down the length of the plate. It is shown that this method of stimulation provides regulation of the phase and amplitude of applied stimulation energy and accurately controls the filament length of all streams. There is also disclosed an improved jet drop recording apparatus wherein

graphic printing quality is greatly improved by travelling wave stimulation of a set of digitally switched jets.

3,739,394

METHOD AND APPARATUS FOR STORING INFORMATION IN A MAGNETO-OPTICAL MEMORY

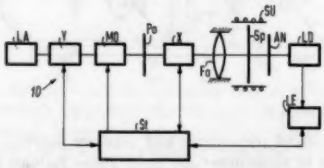
Manfred Becker, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Aug. 26, 1971, Ser. No. 175,101

Claims priority, application Germany, Sept. 3, 1970, P 20 43 766.5

Int. Cl. G11b *7/02*

U.S. Cl. 346—74 MT 8 Claims



The present invention is directed to a method and apparatus for recording information in a magneto-optical memory and for retrieving the information therefrom. The method comprises preparing a storage medium of the memory by applying a magnetic field of one polarity to the storage medium, heating the storage medium to a temperature above the Curie temperature to enable the induced magnetism therein to be in a direction according to the polarity of the magnetic field and maintaining the magnetic field as the storage medium cools below the Curie temperature. To record information on the medium, discrete portions of the medium have the direction of magnetism switched which is accomplished by applying a second magnetic field of a different polarity and selectively heating the discrete portions above the Curie temperature to enable switching of the direction of magnetism in the heated portions of the storage medium. To retrieve information from the memory, the medium is scanned with a linearly polarized light beam whose polarization is changed by the switched direction of magnetism which changes in polarization are converted by an analyzer to an intensity modulated light beam detected by a light detecting device which converts the signal into electrical signals. To prepare the storage medium for recording and to record, a laser is utilized to heat the medium above the Curie temperature and during recording the beam is intensity modulated in accordance to the information to be recorded and scanned on the medium in a line by line manner.

3,739,395

LIQUID DROP PRINTING OR COATING SYSTEM

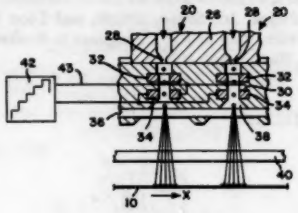
Kenneth O. King, Rolling Hills, Calif., assignor to The Mead Corporation, Dayton, Ohio

Filed Oct. 12, 1971, Ser. No. 188,232

Int. Cl. G01d *15/18*

U.S. Cl. 346—75 1 Claim

A plurality of liquid drop generators produce adjacent streams of discrete drops toward a moving web. The drops are binarily and selectively charged by charging electrodes located along the path of each drop. Uncharged drops follow their initial trajectory directly into catchers instead of depositing on the web. Charged drops are deflected by a first deflection field which is cyclically varied in discrete steps in a lateral direction, transversely of the web, to several scanned trajectories within a lateral plane, and are then deflected again by a second deflection field in a direction along the path of web travel, thereby causing them to miss the catchers and deposit on the moving web. In one embodiment a scanning control correlates the lateral deflection signals, drop generation, and the movement of the web to control the lateral and longitudinal location of individual deposited drops to form an image or pattern on the web. In another embodiment the web moves intermittently, and during the stationary periods the second deflection field is cyclically varied in discrete steps, correlated to the stepping of the first field, whereby charged drops from each generator can reach appropriate locations within a submatrix of the complete image area.



ERRATUM

For Class 346—139 see:
Patent No. 3,739,384

3,739,396

FLUID INJECTION RECORDING SYSTEM UTILIZING ALTERNATING BIAS FIELD

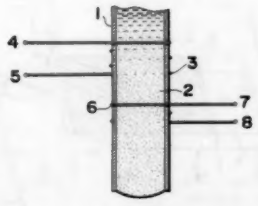
Koosuke Harada, Fukuoka, and Shinjiro Takeuchi, Toda, both of Japan, assignors to Mishima Kosan Co., Ltd., Yawata-ku, Kitakyushu, Fukuoka Prefecture, Japan

Filed Nov. 15, 1971, Ser. No. 198,517

Claims priority, application Japan, Dec. 14, 1970, 45/111459

Int. Cl. G01d *15/18*

U.S. Cl. 346—140 1 Claim

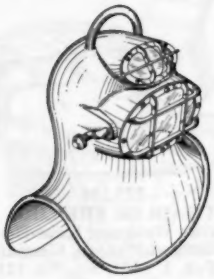


A fluid injection recording system to inject fluid such as magnetic ink from nozzle means on a paper to record a series of dots. Means such as alternating magnetic bias field is applied to the fluid to oscillate the fluid. An input signal is applied to inject the fluid from the nozzle.

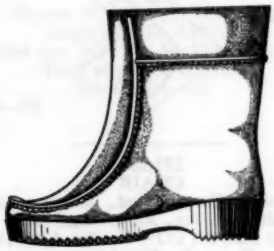
DESIGNS

JUNE 12, 1973

227,196
DIVING HELMET
Charles E. Griswold, Box 976, Seattle, Wash. 98111
Filed Dec. 23, 1971, Ser. No. 211,820
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—232



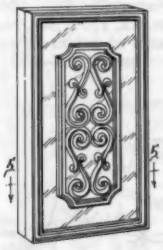
227,197
BOOT
Tatsuo Fukuoka, 3, 3-ban, 2-chome, Shin-Minami-Fukushima, Tokushima, Japan
Filed Nov. 4, 1971, Ser. No. 195,897
Claims priority, application Japan Oct. 1, 1971
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—274



227,198
SANDAL
Tatsuo Fukuoka, 3, 3-ban, 2-chome, Shin-Minami-Fukushima, Tokushima, Japan
Filed Jan. 31, 1972, Ser. No. 222,462
Claims priority, application Japan Dec. 7, 1971
Term of patent 14 years
Int. Cl. D2—*04*
U. S. Cl. D2—283

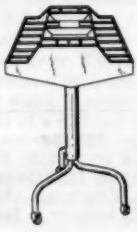
227,199
ANGLE-CUT BROOM
Halbert E. Payne, Riverside, Conn., assignor to The Drackett Company, Cincinnati, Ohio
Filed Dec. 8, 1970, Ser. No. 26,360
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—3

227,200
STORAGE HOUSING FOR AN ELECTRIC TOOTHBRUSH
Donald A. De Varco, Cincinnati, Ohio, and Douglas G. Long, Lombard, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Jan. 3, 1972, Ser. No. 215,279
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D4—16



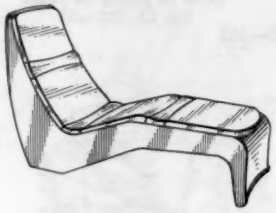
227,201
CHAIR
Frederick Scott, London, England, assignor to Hairlok Limited, formerly The Hairlok Company, Limited, Bedford, Bedfordshire, England
Filed May 14, 1971, Ser. No. 143,745
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—20

227,202
HAIR STYLIST'S ACCESSORY TABLE
Frederic V. Winkler, 14713 Waterway Drive, Rockville, Md. 20853
Filed Sept. 21, 1971, Ser. No. 182,574
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—25



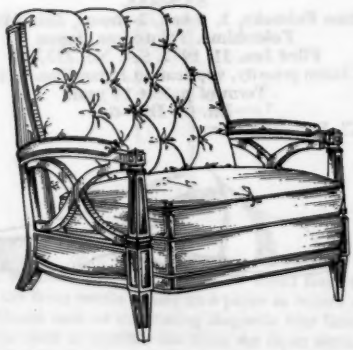
227,203
CHAIR
Thomas Winrow, 530 S. Sleight, Naperville, Ill. 60540
Filed Apr. 22, 1971, Ser. No. 136,649
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—26

227,204
CHAIR
Martin Cunningham Grierson, London, England, assignor to Duncan Wallet & Company Ltd., London, England
Filed Dec. 15, 1970, Ser. No. 26,510
Claims priority, application Great Britain July 15, 1970
Int. Cl. D6—*02*
U.S. Cl. D6—37



227,205
CHAIR OR THE LIKE
Ernst Moeckl, Wangener Hohe-Durrbach 1, 7 Stuttgart-Wangen, Germany
Filed Feb. 1, 1971, Ser. No. 111,781
Claims priority, application Germany Aug. 1, 1970
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—66

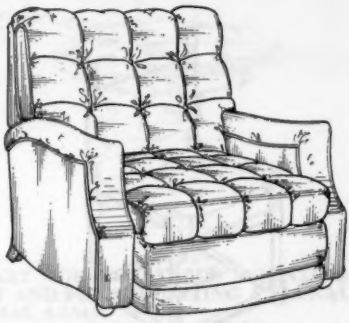
227,206
CHAIR
Morris F. Fisher, Carmel, Ind., assignor to Mohasco Industries, Inc., Amsterdam, N.Y.
Filed Apr. 27, 1971, Ser. No. 138,018
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—68



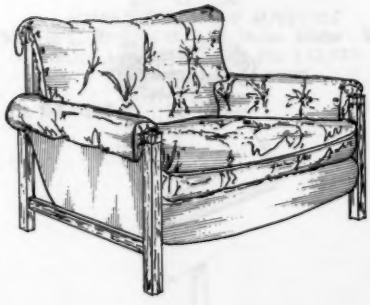
227,207
CHAIR
Don Ray Gill, Hammond, Ind., assignor to Mohasco Industries, Inc., Amsterdam, N.Y.
Filed Apr. 22, 1971, Ser. No. 136,636
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—71

227,208
CHAIR
Thomas Winrow, 530 S. Sleight, Naperville, Ill. 60540
Filed Apr. 22, 1971, Ser. No. 136,656
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—71

227,209
CHAIR
Morris F. Fisher, Carmel, Ind., assignor to Mohasco Industries, Inc., Amsterdam, N.Y.
Filed Apr. 27, 1971, Ser. No. 138,020
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—71

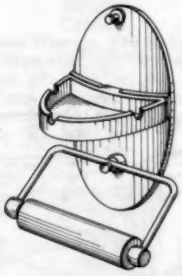


227,210
CHAIR
Thomas Winrow, 530 S. Sleight, Naperville, Ill. 60540
Filed Apr. 22, 1971, Ser. No. 136,653
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—73

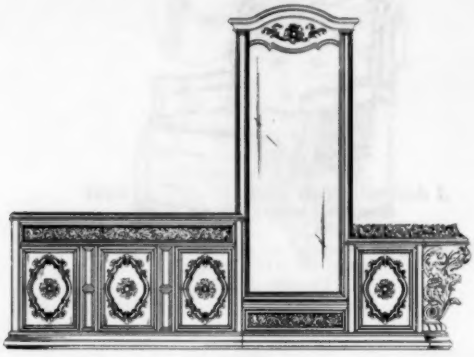


227,211
CHAIR
Jack Klotz and Louise Klotz, Los Angeles, Calif., assignors to Environmental Concepts Products Co., Inc., Beverly Hills, Calif.
Filed Nov. 24, 1971, Ser. No. 202,055
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—75

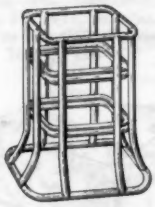
227,212
COMBINED ASHTRAY AND TOILET PAPER HOLDER
Michael M. Graham, 2635 23rd St., Santa Monica, Calif. 90405
Filed July 26, 1971, Ser. No. 166,334
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—91



227,213
COMBINATION DRESSER, MIRROR, AND COMMODE OR THE LIKE
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Feb. 4, 1972, Ser. No. 223,823
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—154

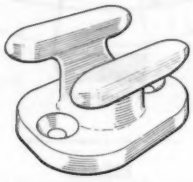


227,214
PEDESTAL FOR A TABLE OR THE LIKE
Tadao E. Inouye, 5724 Fallsgrove St., Los Angeles, Calif. 90016
Filed June 3, 1971, Ser. No. 149,880
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—194

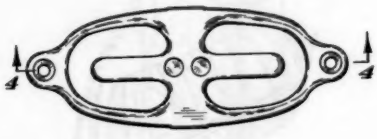


227,215
WIRE STRETCHER
Jean Marie Thevenin, 08-Thilay, Ardennes, France
Filed Feb. 23, 1971, Ser. No. 118,203
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—44

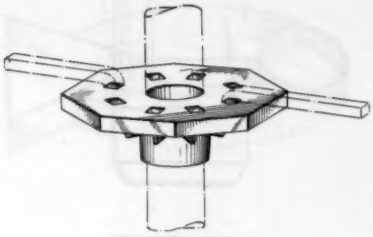
227,216
DOUBLE CLEAT
Albert E. Miller, 413 E. Locust St., Lodi, Calif. 95240
Filed Aug. 13, 1971, Ser. No. 171,784
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—232



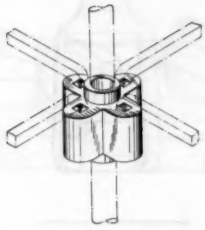
227,217
CLEAT
Charles Otto Pick, 10060 SW. Durham Road, Tigard, Oreg. 97223
Filed Nov. 5, 1971, Ser. No. 196,252
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—232



227,218
POLYGONAL BRACKET FOR ROTATABLE MOUNTING ON A POST AND FOR SUPPORTING A PLURALITY OF RADIAL ARMS
John Rastocny, Cliffside Park, N.J., assignor to Diro Industries Corp., Union City, N.J.
Filed Aug. 31, 1971, Ser. No. 176,776
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—234

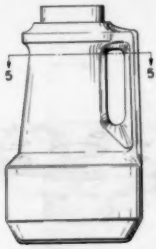


227,219
BRACKET FOR ROTATABLE MOUNTING ON A POST AND FOR SUPPORTING A PLURALITY OF RADIAL ARMS
John Rastocny, Cliffside Park, N.J., assignor to Diro Industries Corp., Union City, N.J.
Filed Aug. 31, 1971, Ser. No. 176,775
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—234



227,220
CONCRETE ROOF SUPPORT
Marvin L. Rich, 1018 Opal, Boise, Idaho 83705
Filed Apr. 9, 1971, Ser. No. 132,923
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—235

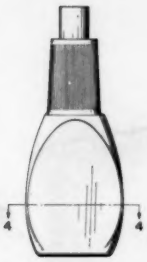
227,221
JUG
Gordon A. Strand, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Jan. 19, 1972, Ser. No. 219,206
Term of patent 7 years
Int. Cl. D9—*01*
U.S. Cl. D9—40



227,222
BOTTLE
James E. Plummer, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Dec. 30, 1971, Ser. No. 214,527
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—44

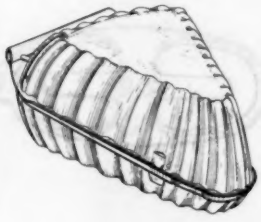
227,223
BOTTLE
Edward J. Kretz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Mar. 20, 1972, Ser. No. 236,572
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—115

227,224
BOTTLE
Peter L. Schweizer, Liberty Center, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Jan. 19, 1972, Ser. No. 219,210
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—137

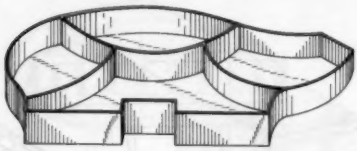


227,225
BOTTLE
Peter L. Schweizer, Liberty Center, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Jan. 19, 1972, Ser. No. 219,207
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—149

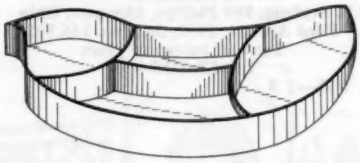
227,226
PACKAGING CONTAINER
Stanford W. Bird, Salt Lake City, Utah, assignor to Plastronics Corporation, Salt Lake City, Utah
Filed Sept. 13, 1971, Ser. No. 180,238
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—182



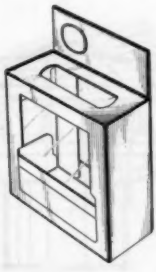
227,227
FOOD PACKAGING TRAY
Frances G. Stamper, Houston, Tex., assignor to General Foods Corporation, White Plains, N.Y.
Filed Jan. 10, 1972, Ser. No. 216,887
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—185



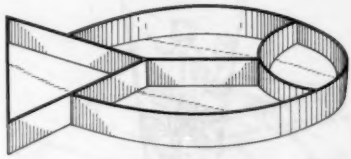
227,228
FOOD PACKAGING TRAY
Frances G. Stamper, Houston, Tex., assignor to General Foods Corporation, White Plains, N.Y.
Filed Jan. 10, 1972, Ser. No. 216,901
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—185



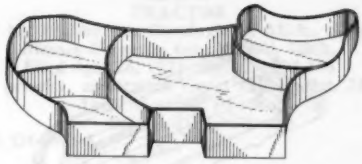
227,229
DISPLAY CARTON OR THE LIKE
Takaji Funahashi, 1, 2-chome, Kitatakasho-machi, Nishi-ku, Nagoya-shi, Aichi-ken, Japan
Filed July 23, 1971, Ser. No. 165,867
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—191



227,230
FOOD PACKAGING TRAY
Frances G. Stamper, Houston, Tex., assignor to General Foods Corporation, White Plains, N.Y.
Filed Jan. 10, 1972, Ser. No. 216,894
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—185



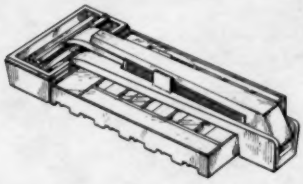
227,231
FOOD PACKAGING TRAY
Frances G. Stamper, Houston, Tex., assignor to General Foods Corporation, White Plains, N.Y.
Filed Jan. 10, 1972, Ser. No. 216,895
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—185



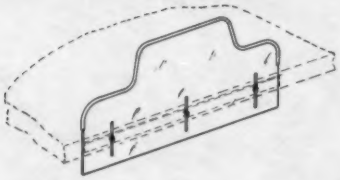
227,232
RAZOR CASE OR SIMILAR ARTICLE
Martin Glaberson, Ardsley, N.Y., and Robert J. Gould, Fairfield, Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.
Filed Apr. 16, 1971, Ser. No. 134,794
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—186

227,233
FLOWER PACKAGE
Victor Manuel, 491 NW. 44th Ave., Fort Lauderdale, Fla. 33313
Filed July 22, 1971, Ser. No. 165,429
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—193

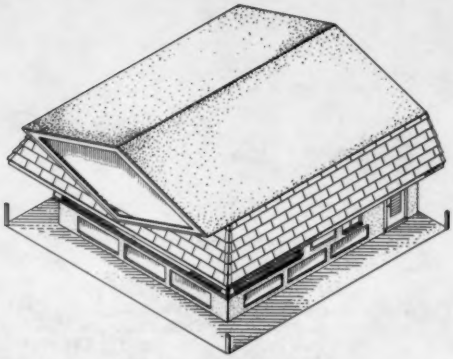
227,234
COMBINED RAZOR, RAZOR BLADE CARTRIDGE DISPENSER AND HOLDER THEREFOR
Martin Glaberson, Ardsley, N.Y., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Oct. 22, 1971, Ser. No. 191,952
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—193



227,235
MEAT BENCH GUARD
Mervyn Howard Miller, Mississauga, Ontario, Canada, assignor to Steinberg's Limited-Steinberg Limitee, Montreal, Quebec, Canada
Filed Jan. 28, 1971, Ser. No. 110,796
Claims priority, application Canada Sept. 16, 1970
Term of patent 14 years
Int. Cl. D7—*04, 99;* D15—*08*
U.S. Cl. D11—2 A

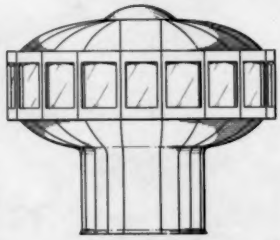


227,236
BUILDING STRUCTURE
William Seibert, Haddonfield, N.J., assignor to The Frostie Company, Camden, N.J.
Filed Mar. 20, 1972, Ser. No. 236,574
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 B

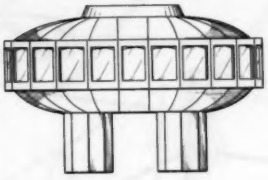


227,237
BUILDING
Robert F. Seyfang, 909 Phillips, Maumee, Ohio 43537
Filed Apr. 21, 1972, Ser. No. 246,502
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 B

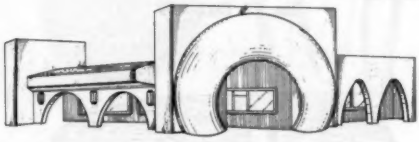
227,238
PEDESTAL BUILDING STRUCTURE
Alton D. Wheeler, 3940 Fox Meadow, Pasadena, Tex. 77502
Filed May 18, 1972, Ser. No. 254,846
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 E



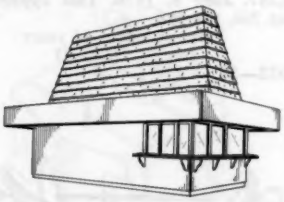
227,239
DOUBLE PEDESTAL BUILDING STRUCTURE
Alton D. Wheeler, 3940 Fox Meadow, Pasadena, Tex. 77502
Filed May 18, 1972, Ser. No. 254,847
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 E



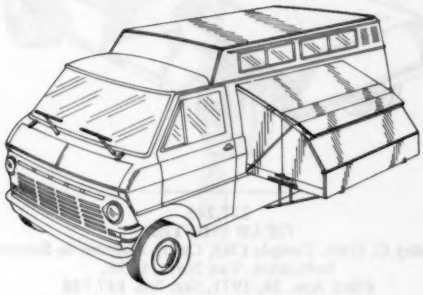
227,240
BUILDING
John H. Tindall, Laguna Hills, Calif., assignor to Diamond Donut, Inc., West Covina, Calif.
Filed Feb. 14, 1972, Ser. No. 226,361
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 B



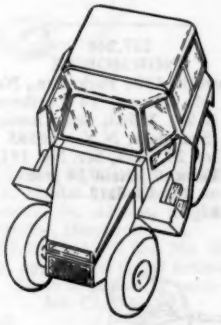
227,241
BUILDING
Robert C. Lane, Houston, Tex., assignor to Lane Equipment Company, Houston, Tex.
Filed May 22, 1972, Ser. No. 255,929
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 B



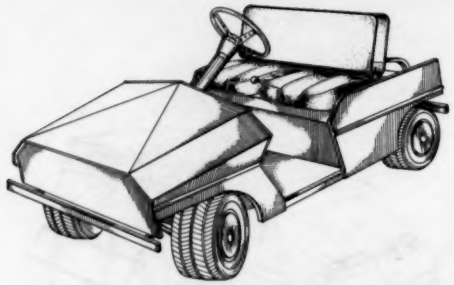
227,242
RECREATION VEHICLE
Dale M. Hanson, Anaheim, Calif., assignor of a fractional part interest to Jim Hanson's Auto Reconstruction, Inc., Long Beach, Calif.
Filed Feb. 26, 1971, Ser. No. 119,447
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D14—3 J



227,243
TRACTOR
Samuel M. Highberger, Birmingham, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.
Filed Apr. 26, 1971, Ser. No. 137,346
Claims priority, application Great Britain Oct. 28, 1970
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D14—3 A

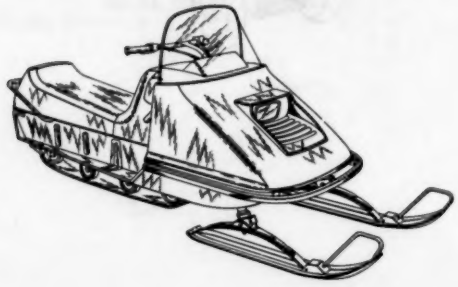


227,244
UTILITY VEHICLE
Charles I. Keene, Fontana, Calif., assignor to Herman P. Smith, Holtville, Calif.
Filed Oct. 22, 1971, Ser. No. 191,963
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D14—3 G

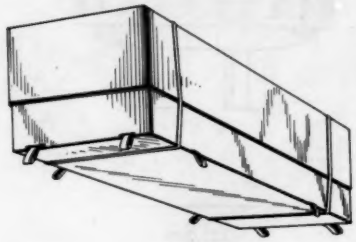


227,245
GEAR SHIFTER
Stanley C. Hess, Temple City, Calif., assignor to Superior Industries, Van Nuys, Calif.
Filed Apr. 26, 1971, Ser. No. 137,728
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—6 V

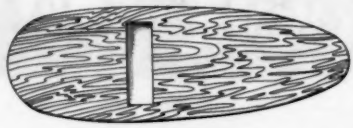
227,246
SNOWMOBILE
William F. H. Purcell, 1001 Park Ave., New York, N.Y. 10028; James M. Conner, 14 Leatherstocking Lane, Mamaroneck, N.Y. 10543; and Charles W. Pelly, 51 Pilgrim Road, Scarsdale, N.Y. 10585
Filed Oct. 20, 1971, Ser. No. 191,140
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D14—24



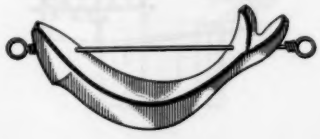
227,247
DISPOSABLE AIR TRAY RECEPTACLE FOR ENCASING A CASKET FOR PROTECTION DURING AIR SHIPMENT
Clyde A. Dittbenner, Ormond Beach, Fla., assignor to William T. Moore, Jr., and Betty J. Wood, both of Ormond Beach, and Edwin D. Davis, Daytona Beach, Fla., fractional part interest to each
Filed May 21, 1971, Ser. No. 145,989
Term of patent 14 years
Int. Cl. D31
U.S. Cl. D19—1



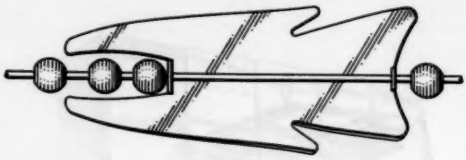
227,248
RECOIL PAD FOR FIREARMS
Francesco Cervellati, Bologna, Italy, assignor to Kassnar Imports, Harrisburg, Pa.
Filed May 10, 1971, Ser. No. 142,109
Term of patent 14 years
U.S. Cl. D22—9
Int. Cl. D22—*99*



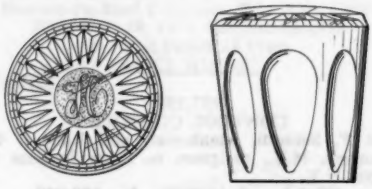
227,249
COMBINATION FISH LINE STABILIZER AND SINKER
Ewell J. Harris, Sunset Mobile Homes, Rte. 3, Box 135A, Lot 13, Adrian, Mich. 49221
Continuation-in-part of abandoned design application Ser. No. 23,357, June 8, 1970. This application May 3, 1971, Ser. No. 140,008
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



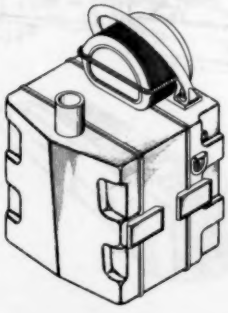
227,250
FISH LURE
Ewell J. Harris, Sunset Mobile Homes, Rte. 3, Box 135A, Lot 13, Adrian, Mich. 49221
Filed Sept. 2, 1971, Ser. No. 177,523
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—29



227,251
FAUCET HANDLE
Mark B. Botefur, Fullerton, Stephen J. Kelsey, Granada Hills, and Harold J. Valley, Rolling Hills, Calif., assignors to Martin Marietta Aluminum Inc.
Filed Aug. 27, 1971, Ser. No. 175,802
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—28

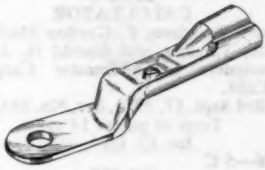


227,252
PORTABLE AIR PURIFIER
Edward R. Bush, North Hollywood, Calif., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Mar. 23, 1972, Ser. No. 237,606
Term of patent 14 years
Int. Cl. D23—*99*
U.S. Cl. D23—149

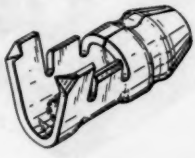


227,253
EARTH BAR
Kiyoo Tsunokawa, Yoshikazu Yoshida, and Kenji Konishi, Hitachi, Hajime Morita, Tokyo, and Osamu Nishikawa, Ibaraki, Japan, assignors to Hitachi Cable, Ltd., Tokyo, and Japan Power Safety Device M.F.G. Co., Ltd., Osaka, Japan
Filed Dec. 22, 1970, Ser. No. 26,613
Term of patent 7 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 A

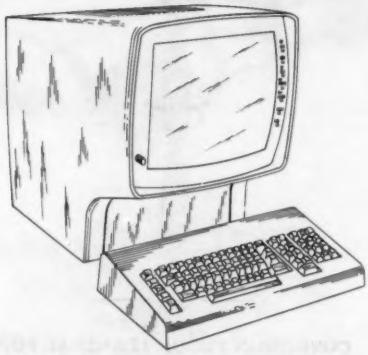
227,254
CORROSION PROOF TERMINAL FOR ALUMINUM WIRE CONDUCTOR
Ronald Clarence Hoffman, 414 Elizabeth St., Williamstown, Pa. 17098
Filed Nov. 17, 1970, Ser. No. 26,738
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 A



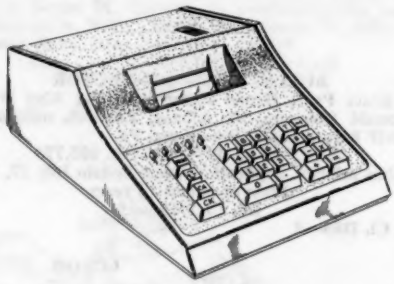
227,255
BULLET PLUG CONNECTOR
Ian Bruce Page, Hemel Hempstead, and Alan William Ronald Podmore, St. Albans, England, assignors to AMP Incorporated, Harrisburg, Pa.
Filed Jan. 11, 1971, Ser. No. 105,773
Claims priority, application Great Britain July 27, 1970
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1



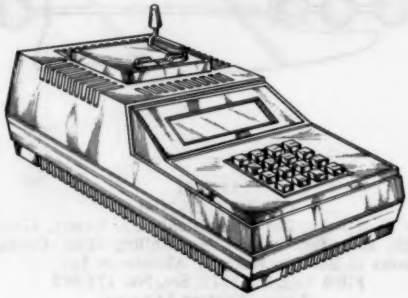
227,256
COMBINED KEYBOARD INPUT TERMINAL AND OUTPUT DISPLAY TERMINAL THEREFOR
Ronald I. Conway, Port Ewen, Robert V. Jones, Kingston, James J. La Due, Wappingers Falls, and John J. Natoli, Woodstock, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 1, 1971, Ser. No. 130,551
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



227,257
CALCULATOR
John G. Clary, Pasadena, F. Gordon Mackay and Allan B. Johnson, Tarzana, and Gerald W. Lee, Montrose, Calif., assignors to Addmaster Corporation, San Gabriel, Calif.
Filed Sept. 17, 1971, Ser. No. 181,658
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

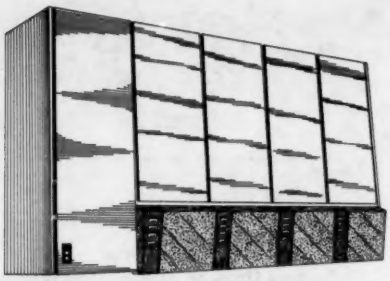


227,258
CARD READING KEYBOARD TERMINAL OR THE LIKE
Charles T. Inatomi, 10733 Flaxton St., Culver City, Calif. 90230
Filed Oct. 20, 1971, Ser. No. 191,133
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

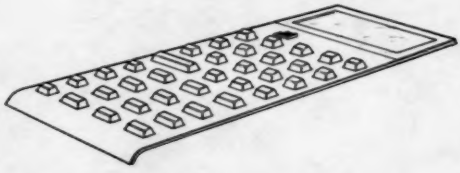


227,259
CONTROL CONSOLE
Vincent F. Santulli, Manhasset, and John J. Gazzo, Commack, N.Y., assignors to Porta Systems Corp., Roslyn, N.Y.
Filed June 1, 1972, Ser. No. 258,927
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

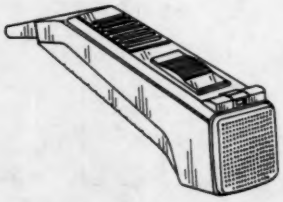
227,260
COMBINED MAGNETIC TAPE DRIVE UNITS AND CONTROL UNIT
Richard G. Clayton, Detroit, and Thomas C. Abrahamsen, Birmingham, Mich., assignors to Burroughs Corporation, Detroit, Mich.
Filed June 19, 1972, Ser. No. 264,073
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



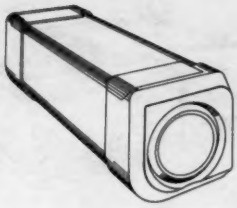
227,261
COMBINED KEYBOARD AND DISPLAY PANEL FOR AN ELECTRONIC CALCULATOR
Edward T. Liljenwall, Sunnyvale, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed June 28, 1972, Ser. No. 266,933
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



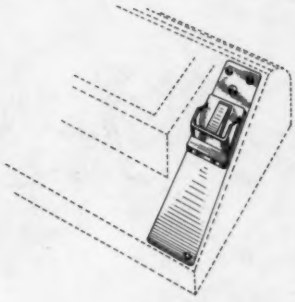
227,262
MICROPHONE
Rebertus van de Poel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation
Filed Feb. 4, 1971, Ser. No. 112,844
Claims priority, application Switzerland Aug. 12, 1970
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14



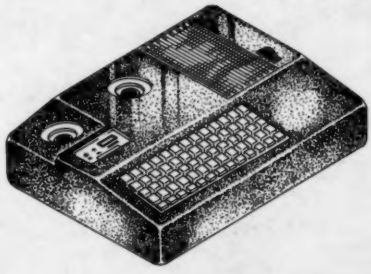
227,263
SNAP-OPEN MAGNETIC TAPE CARTRIDGE
Gary L. Allison and Vladimir Nejezchleb, Boulder, Helfried O. Rinkleib, Longmont, and Gary L. Switser, Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 9, 1971, Ser. No. 114,104
Term of patent 7 years
Int. Cl. D14—*02, 99*
U.S. Cl. D26—14 B



227,264
TELEPHONE HANDSET HOLDER-SWITCH
John P. Kennedy, 2198 Woodstock Road, Columbus, Ohio 43215
Filed June 23, 1971, Ser. No. 156,154
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



227,265
TELEPHONE TERMINAL
Robert C. Hagemann, Farmington, John A. McAvoy, Fenton, Joseph L. Prokop, Detroit, and Roger F. Thompson, Fenton, Mich., assignors to Burroughs Corporation, Detroit, Mich.
Filed Nov. 15, 1971, Ser. No. 199,087
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

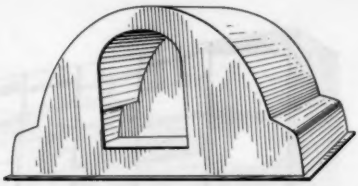


227,266
COMBINED RECORDER AND PLAYBACK UNIT OR SIMILAR ARTICLE
Y. Alan Shimasaki, Tokyo, Japan, assignor to Lanier Electronic Laboratory, Inc., Atlanta, Ga.
Filed Nov. 22, 1971, Ser. No. 201,268
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B

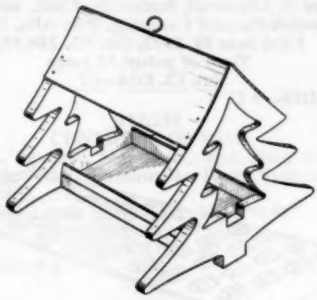
227,267
SOUND TUBE HEAD SET
Thomas Albert Scanlon, Barrington, R.I., assignor to Avid Corporation, East Providence, R.I.
Filed Dec. 9, 1971, Ser. No. 206,595
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 H

227,268
FIGURINE
Mary B. Johns, 413 S. 11th St., Cambridge, Ohio 43725
Substituted for abandoned design application Ser. No. 10,059, Jan. 4, 1968. This application Feb. 25, 1971, Ser. No. 119,073
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 B

227,269
FARROWING HUT
William E. Sedgwick, Cameron, Mo., assignor to Cameron Industries, Cameron, Mo.
Filed May 17, 1971, Ser. No. 144,370
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1

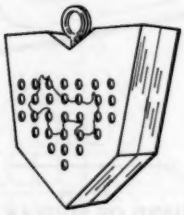


227,270
BIRD FEEDER
Leonard Onos, 88 Ramapo Hills Blvd., Oakland, N.J. 07436
Filed Oct. 27, 1971, Ser. No. 193,234
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13



227,271
ANIMAL IDENTIFICATION TAG
Harley E. Nichols, Jr., Hardwick, Vt., assignor to C. H. Dana Company, Inc.
Filed Mar. 4, 1971, Ser. No. 121,239
Term of patent 14 years
Int. Cl. D30—*08*
U.S. Cl. D30—43

227,272
CHEMICAL CONTAINER FOR ATTACHMENT TO A DOG'S COLLAR OR SIMILAR ARTICLE
Arthur W. Bozard, P.O. Box 45, Holly Ridge, N.C. 28445
Filed Nov. 3, 1971, Ser. No. 195,536
Term of patent 14 years
Int. Cl. D30—*08*
U.S. Cl. D30—43



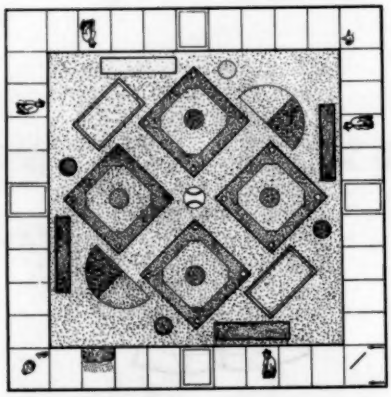
227,273
DOLL
Judith Paruolo, Westbury, N.Y., assignor to Ideal Toy Corporation, Hollis, N.Y.
Filed Feb. 10, 1972, Ser. No. 225,367
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 R

227,274
DOLL
Judith Paruolo, Westbury, N.Y., assignor to Ideal Toy Corporation, Hollis, N.Y.
Filed Feb. 10, 1972, Ser. No. 225,368
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 R

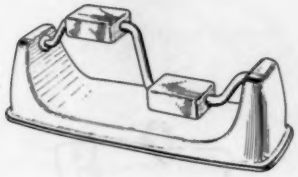
227,275
DOLL
Judith Paruolo, Westbury, N.Y., assignor to Ideal Toy Corporation, Hollis, N.Y.
Filed Feb. 10, 1972, Ser. No. 225,369
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 R

227,276
GOLF BAG STAND
Howard A. Benzel, 28 Lombardy St., Lancaster, N.Y. 14086
Filed Apr. 8, 1971, Ser. No. 132,635
Term of patent 7 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GB

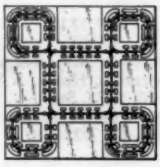
227,277
GAME BOARD
Raymond E. Reilly, 9308 Convento Terrace, Fairfax, Va. 22030
Filed Sept. 3, 1971, Ser. No. 177,919
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 BG



227,278
PEDAL EXERCISER
Oscar T. Arato, 25 Kensington Ave., Willowdale, Ontario, Canada
Filed Nov. 26, 1971, Ser. No. 202,049
Term of patent 7 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 K

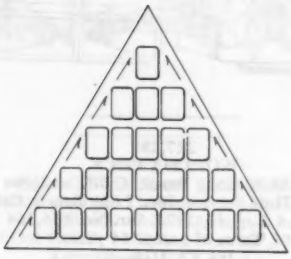


227,279
GAME BOARD OR SIMILAR ARTICLE
John R. Schlosser, 12 Elmwood Drive, Mapleton, Iowa 51034
Filed Dec. 6, 1971, Ser. No. 205,476
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



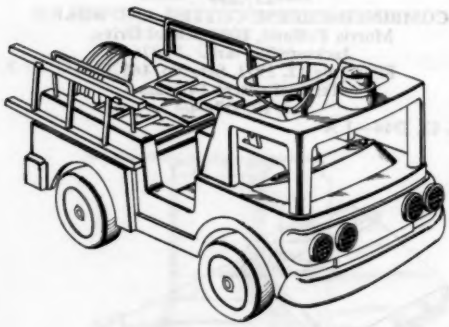
227,280
SLIDE
Neil H. Silverman, 13 Ursula Drive, Roslyn, N.Y. 11576
Filed Jan. 27, 1972, Ser. No. 221,486
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5 E

227,281
GAME BOARD
Robert S. Meyer, 475 Presidential Lane, Madison, Wis. 53711
Filed Feb. 25, 1972, Ser. No. 229,619
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS

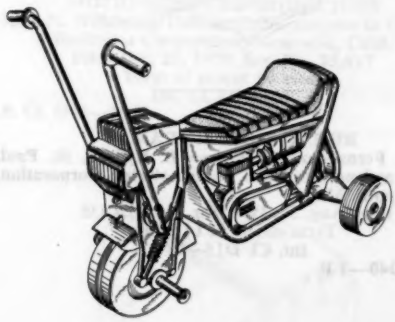


227,283
TOY DUMP TRUCK
Toyotsugu Ogasawara, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan
Filed Aug. 31, 1971, Ser. No. 176,788
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ

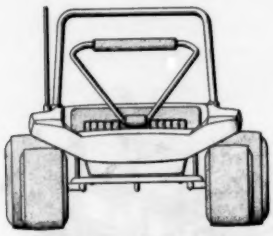
227,282
JUVENILE VEHICLE
Viktor Schreckengost, Cleveland Heights, Ohio, assignor to The Murray Ohio Manufacturing Co., Nashville, Tenn.
Filed June 25, 1971, Ser. No. 157,068
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



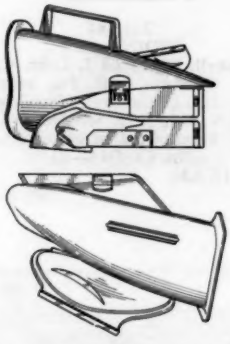
227,284
RIDING TOY
Laurie J. Campbell, Raymond J. Lohr, Calvin S. Cook, and Paul G. Goodwin, Erie, Pa., assignors to Louis Marx & Co., Inc. (Delaware), New York, N.Y.
Filed Nov. 5, 1971, Ser. No. 196,265
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



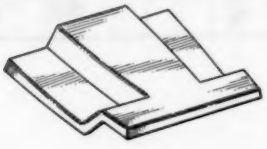
227,285
TOY COASTER WAGON
Leonard Stobar, Granada Hills, Calif., assignor to Kusan, Inc., Nashville, Tenn.
Filed Mar. 13, 1972, Ser. No. 234,466
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



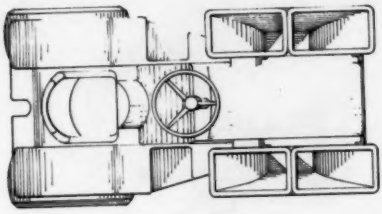
227,286
COMBINED DISCHARGE DEFLECTOR FOR MOWERS AND THE LIKE
Richard A. Thorud, Minneapolis, Minn., assignor to Toro Manufacturing Corporation, Minneapolis, Minn.
Filed Jan. 14, 1971, Ser. No. 106,635
Term of patent 14 years
Int. Cl. D15—*03, 99*
U.S. Cl. D40—1 B



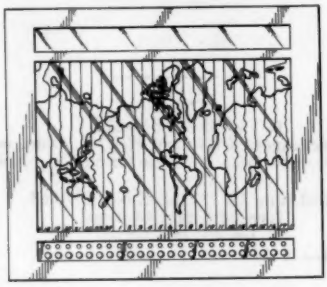
227,287
RIDING MOWER FRAME
Mario F. Fernandez and Robert L. Rydeen, St. Paul, Minn., assignors to Toro Manufacturing Corporation, Minneapolis, Minn.
Filed Aug. 30, 1971, Ser. No. 176,435
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D40—1 R



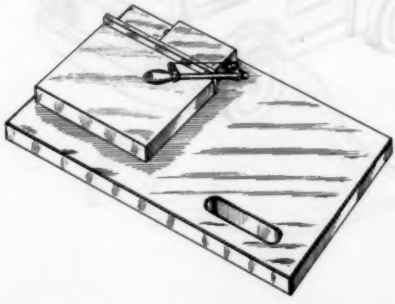
227,288
LAWN TREATING MACHINE
Robert Picardat, 7712 Ridgecrest Drive, Alexandria, Va. 22380
Filed May 6, 1971, Ser. No. 141,088
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D40—1 E



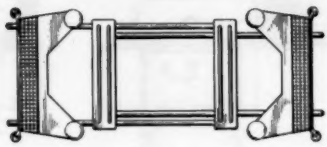
227,289
WORLD CLOCK
Robert M. Eldon, Long Beach, Calif., assignor to California Time Service, Inc., Long Beach, Calif.
Filed Aug. 16, 1971, Ser. No. 176,364
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7 F



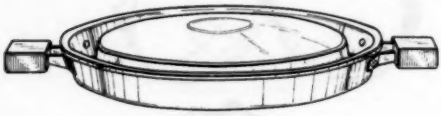
227,290
COMBINED CHEESE CUTTER AND BOARD
Morris T. Bond, 1000 School Drive, Jacksonville, Ark. 72076
Filed July 12, 1971, Ser. No. 161,384
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D44—1 A



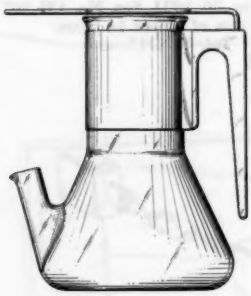
227,291
ADJUSTABLE DISH HOLDER
Pieter Kant, Kort Ambachtlaan 22, Zwijndrecht, Netherlands
Filed Feb. 16, 1971, Ser. No. 115,919
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D44—10 B



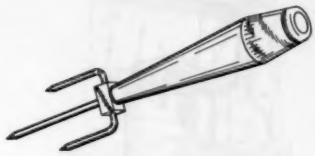
227,292
PAN OR SIMILAR ARTICLE
Yuki Yamamoto, 1343 Ushita-machi, Hiroshima-shi, Hiroshima-ken, Japan
Filed Oct. 7, 1971, Ser. No. 187,596
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—1 J



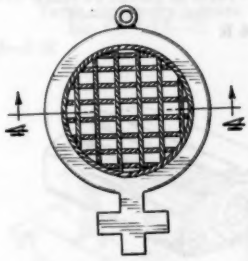
227,293
COFFEE MAKER
Joseph C. Ehrlich, 2440 Sedgwick Ave., Bronx, N.Y. 10468
Filed Sept. 24, 1971, Ser. No. 183,746
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D44—26 A



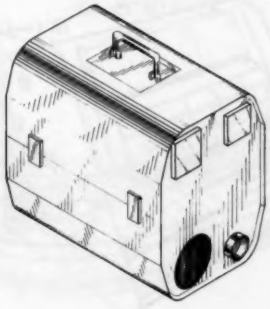
227,294
FORK
Edmund M. Maynard, Santa Monica, Calif., assignor to Gaydell, Inc., Santa Monica, Calif.
Filed June 23, 1972, Ser. No. 265,831
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—29 E



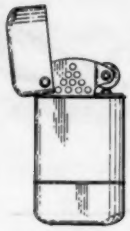
227,295
LOCKET
Michael P. Patterson, Hopkins, Minn., assignor to Great Things Incorporated, Minneapolis, Minn.
Filed Feb. 29, 1972, Ser. No. 230,547
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—15



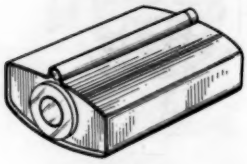
227,296
HOUSING FOR AN AUXILIARY LAMP FOR MOTION PICTURE PROJECTORS
John N. Wilkinson, Duarte, Calif., assignor to Optical Radiation Corporation, Monrovia, Calif.
Filed Oct. 23, 1970, Ser. No. 25,617
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 E



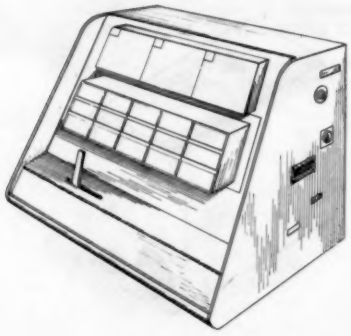
227,297
DUAL-HEADED LIGHTER
Joseph B. Springel, 1471 W. Nine Mile Road, Ferndale, Mich. 48220
Filed July 7, 1971, Ser. No. 160,581
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27 R



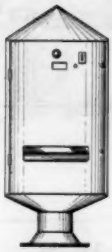
227,298
DISTANCE MEASURING INSTRUMENT OR THE LIKE
Bary R. Mathis, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed June 14, 1971, Ser. No. 153,163
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 R



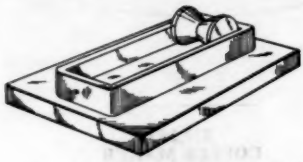
227,299
VOTING MACHINE
Michael Terrance Moldovan, Jr., Lakewood, N.Y., assignor to AVM Corporation, Jamestown, N.Y.
Filed June 28, 1971, Ser. No. 157,781
Term of patent 14 years
Int. Cl. D10—*99*
U.S. Cl. D52—6 R



227,300
AUTOMATIC TOKEN VENDING MACHINE
Fukuju Yamada, Tokyo, Japan, assignor to Jaguar Shokai Co., Ltd., Tokyo, Japan
Filed Dec. 14, 1971, Ser. No. 208,058
Term of patent 3½ years
Int. Cl. D20—*01*
U.S. Cl. D52—3 R

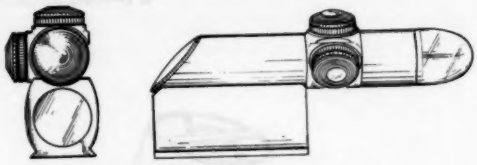


227,301
ROLLER SUPPORT MECHANISM OR THE LIKE
Willard J. Cobb, Raleigh, N.C., assignor to Perry Electronics, Inc., Raleigh, N.C.
Filed Feb. 3, 1971, Ser. No. 112,510
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 H



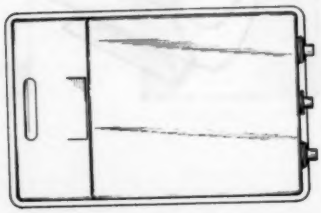
227,302
PROTECTIVE BUMPER FOR MUSICAL DRUMS OR SIMILAR ARTICLE
John J. Morena, Levittown, and Robert N. Grauso, Bayside, N.Y., assignors to C. F. Martin & Co., Nazareth, Pa.
Filed Apr. 30, 1971, Ser. No. 139,307
Term of patent 14 years
Int. Cl. D17—*04*
U.S. Cl. D56—1 E

227,303
SIGHTING DEVICE FOR FIREARMS
Wililam F. Steck III, El Paso, Tex., assignor to W. R. Weaver Company
Filed Mar. 17, 1971, Ser. No. 125,464
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 E

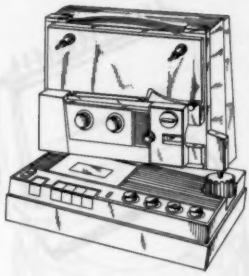


227,304
SUNGLASS FRAME FRONT
Roger L. McCracken, Chili, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Original design application Dec. 31, 1969, Ser. No. 20,715, now abandoned. Divided and this application Dec. 2, 1970, Ser. No. 26,252
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 D

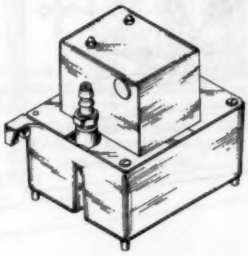
227,305
CHEMICAL CONTAINER FOR PHOTOGRAPHIC PROCESSING
George A. Wilke, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 20, 1971, Ser. No. 145,604
Term of patent 14 years
Int. Cl. D16—*04;* D9—*99*
U.S. Cl. D61—1



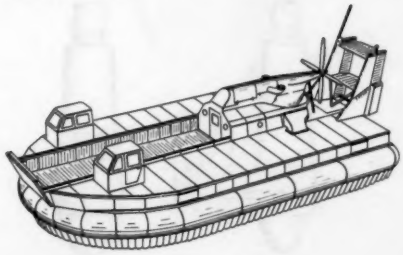
227,306
MOTION PICTURE PROJECTOR
Max Kotler, Montvale, N.J., assignor to De Jur-Amsco Corporation, Long Island City, N.Y.
Filed Sept. 24, 1971, Ser. No. 183,723
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D61—1 K



227,307
CONDENSATE PUMP
Charles B. Wells, Feasterville, Pa., assignor to Hartell, Inc., Huntingdon Valley, Pa.
Filed Sept. 15, 1971, Ser. No. 180,944
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D65—1 R

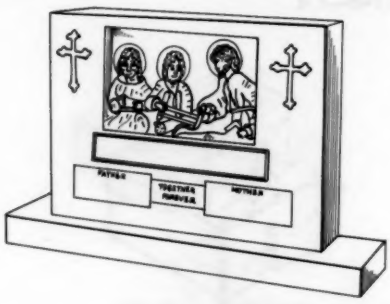


227,308
AIR CUSHION VEHICLE
Raymond Leslie Wheeler, Brovacum, Old Road, East Cowes, Isle of Wight, England
Filed Sept. 8, 1971, Ser. No. 178,851
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D71—1 M

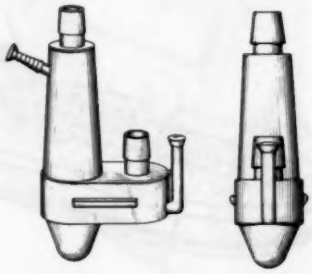


227,309
TELEPHONE INDEX
Clayton Austin Laughlin, Minneapolis, Minn., assignor to Standard Packaging Corporation, New York, N.Y.
Filed Sept. 23, 1971, Ser. No. 183,299
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—1 C

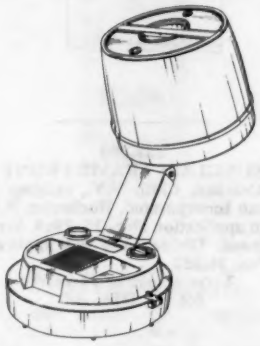
227,310
CEMETERY HEADSTONE
Marian O'Leska, 521 Mitchell Ave., Clairton, Pa. 15025
Filed Jan. 22, 1971, Ser. No. 109,083
Term of patent 14 years
Int. Cl. D31
U.S. Cl. D79—2



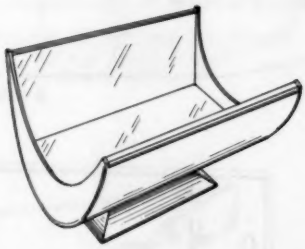
227,311
DISPOSABLE CONTAINER FOR AN ULTRASONIC NEBULIZER
Thomas W. Argy, Chicago, and Michael A. Fanizza, Mount Prospect, Ill., assignors to Zenith Radio Corporation, Chicago, Ill.
Filed June 4, 1971, Ser. No. 149,977
Term of patent 14 years
Int. Cl. D23—*01;* D24—*02*
U.S. Cl. D83—1 N



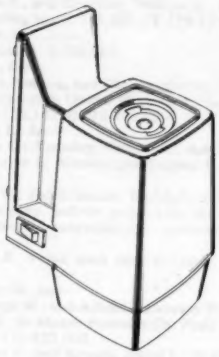
227,312
HAIR DRYER
Tim Cunningham, Pittsburgh, Pa., assignor to Scovill Manufacturing Company, Waterbury, Conn.
Filed Oct. 20, 1970, Ser. No. 25,568
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 F



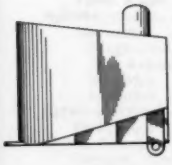
227,313
VANITY MIRROR
Paul B. Elsner, Outrigger East Hotel, 150 Kaiulani Ave., Honolulu, Hawaii 96815
Filed Mar. 22, 1971, Ser. No. 127,071
Term of patent 7 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 H

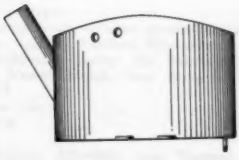


227,314
ELECTRIC HOUSEHOLD ROTARY POWER UNIT
Jean Mantelet, 46–48 Avenue Montaigne, Paris 8e, France
Filed Dec. 28, 1971, Ser. No. 213,242
Claims priority, application France July 12, 1971
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D89—1 B

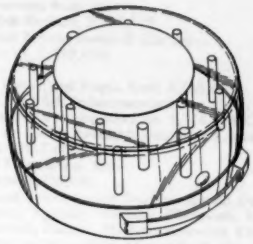


227,315
OIL TANK FOR MOTORCYCLES AND THE LIKE
Robert E. Wills, 1183 Chesapeake Ave., Columbus, Ohio 43212
Filed Sept. 22, 1971, Ser. No. 182,929
Term of patent 7 years
Int. Cl. D12—*16, 11*
U.S. Cl. D90—1





227,316
HAIR ROLLER CARRYING CASE
Stuart Bernard MacKenzie, London, England, assignor to British Domestic Appliances Limited, Peterborough, England
Filed Sept. 23, 1971, Ser. No. 183,291
Term of patent 7 years
Int. Cl. D3—*99*
U.S. Cl. D86—10 E



227,317
DISPLAY SIGN
Reginald Frederick William Hunt, London, England, assignor to Harrison & Pinder Limited, London, England
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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF JUNE, 1973

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Beadman, Terence Brockley, to Rolls-Royce Limited. Electronic rate means for a servo driven fuel control. 3,739,250, Cl. 318-610.000.
Beaman, Alden Gamaliel; and Miller, Oscar Neal, to Hsffmann-La Roche Inc. Nicotinic acid derivatives. 3,738,990, Cl. 260-295.50r.
Bean, Kenneth E.; and Gleim, Paul S., to Texas Instruments, Incorporated. Dielectric isolation processes. 3,738,883, Cl. 156-17.000.
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Bechtel, Alfred R., Jr., to Ashworth Bros. Inc. Card clothing. 3,737,953, Cl. 19-113.000.
Bechtel, Bartow; and Green, Max B., to Texas Instruments, Incorporated. Mechanically swept radar antenna for use with an aircraft landing monitor system. 3,739,385, Cl. 343-705.000.
Bechtel, Peter J., to Quaker Oats Company, The. Process for producing a canned egg in meat pet food. 3,738,847, Cl. 99-187.000.
Becker, Joseph J.; and Cech, Robert E., to General Electric Company. Permanent magnet material powders having superior magnetic characteristics and method. 3,738,876, Cl. 148-105.000.
Becker, Manfred, to Siemens Aktiengesellschaft. Method and apparatus for storing information in a magneto-optical memory. 3,739,394, Cl. 346-74.0mt.
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Bednarski, Thaddeus E., to Black and Decker Manufacturing Company, The. Method of making an insulated armature. 3,737,987, Cl. 29-596.000.
Bednarski, Thaddeus E., to Black and Decker Manufacturing Company, The. Method of bonding armature sub-assemblies. 3,737,988, Cl. 29-596.000.
Beich, Frank R., to American Hospital Supply Corporation. Syringe with self-returnable plunger. 3,738,539, Cl. 222-341.000.
Beil, Ralph G., to Schlumberger Technology Corporation. Acoustic impedance logging using reflection coefficients. 3,739,328, Cl. 340-15.5ac.
Beiser, Leo, to Columbia Broadcasting System, Inc. Laser systems and laser control systems. 3,739,296, Cl. 331-94.50k.
Belansky, Rudolph J., to Illinois Tool Works Inc. Limited slip differential mechanisms. 3,738,192, Cl. 74-711.000.
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Bellisio, Arthur A.; Payras, Hippocrates G.; and Fein, Marvin M., to GAF Corporation. Process for using N-alkyl lactams for stripping sulfur dioxide from gas streams. 3,738,086, Cl. 55-48.000.

Beloit Corporation: *See—*
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Belter, John W., to United States of America, Interior. Dual pulse-jet system for the combustion of high ash fuel. 3,738,290, Cl. 110-28.00r.

Bender, Friedrich Karl. Method for joining a number of reinforcing bars simultaneously and a tool for carrying out this method. 3,737,968, Cl. 29-200.00r.

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Benjamin, Milton L.; and Miles, Wilbur N., to Erickson Tool Company. Adjustable boring bar. 3,738,767, Cl. 408-161.000.

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Berland, Abram; and Berland, Moises. Chopper for meat and other foods. 3,738,585, Cl. 241-186.00r.

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Berlyn, Ronald Cory, to Lucas, Joseph, (Industries) Limited. Masks for use in the manufacture of circuit boards. 3,738,639, Cl. 269-317.000.

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Bertrand, James G. Motorized collapsible tube dispenser. 3,738,533, Cl. 222-102.000.

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Betts, Edward E.; and Kulczycki, Stanley N., to McDonnell Douglas Corporation. Silent drive coat hanger rack mechanism. 3,738,497, Cl. 211-1.500.

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Beyerle, Rudi; Stachel, Adolf; deceased (by Stachel, Ingeburg Lydia Katharina; heiress-at-law); Nitz, Rolf-Eberhard; and Scholtholt, Josef. Certain 3-(3-amino-2-benzoyloxypropyl)-4 (3H)-quinazolinones. 3,738,985, Cl. 260-243.00b.

Biale, John, to Union Oil Company of California. Polymerization of ethylene with a supported palladium catalyst. 3,738,977, Cl. 260-94.9da.

Bianchini, Giacomo. Fabrics coupling machine. 3,738,897, Cl. 156-498.000.

Bickel, Hans; and Kump, Wilhelm, to Ciba-Geigy Corporation. Antibiotically active compounds. 3,738,980, Cl. 260-239.30p.

Bickler, Donald Bertram, to Globe-Union Inc. Energy sensitive readout device. 3,739,182, Cl. 250-219.0dc.

Bieber, George. Device for dumping beet boxes. 3,738,707, Cl. 298-18.000.

Biesinger, Erwin; Kostora, Lothar; and Sohnchen, Karl, to Seco Maschinenbau GmbH & Co., KG. Drum having displaceable textile web partition means. 3,738,129, Cl. 68-145.000.

Big Dutchman (Nederland) N.V.: *See—*
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Big Three Industries, Inc.: *See—*
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Bilco, Arthur, to Raymond Corporation, The. Hydraulic seals. 3,738,665, Cl. 277-3.000.

Billson, John A., to General Electric Company. Reflector alignment apparatus. 3,737,960, Cl. 29-25.150.

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Binnings, Gerald F.; Meyer, Theodore N.; and Riley, Mel J., to Aerojet-General Corporation. Microscope attachement. 3,738,730, Cl. 350-90.000.

Bishop, Gilbert H. Method and apparatus for forming ice island for drilling or the like. 3,738,114, Cl. 61-46.500.

Bitzer, Donald L.; Bandy, Lyle E.; Johnson, Roger L.; and Skaperdas, Dominic O., to University of Illinois Foundation. Fluid positionable means and fluid control means therefor. 3,738,227, Cl. 91-167.000.

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Blackwell, John, to Du Pont de Nemours, E. I., and Company. Uniformly dyed yellow water swellable cellulosic fibers. 3,738,801, Cl. 8-21.00c.

Blaire, Pete, 1/2 to Halliday, Michael and Orr, Samuel J., IV. Separator for new paper money. 3,738,642, Cl. 271-10.000.

Blanzy, Eugene J.; and Duperow, Donald E., to Lincoln Brass Works, Inc. Borner structure. 3,738,577, Cl. 239-568.000.

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Bloch, Michael; and Koebner, Adolph, to Rewo Chemische Fabrik G.m.b.H. Process for the preparation of quaternary imidazoline derivatives. 3,738,996, Cl. 260-309.600.

Blomberg, Theodore G. Disposable forceps. 3,738,366, Cl. 128-354.000.

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Bochmann, Karlheinz, to Siemens Aktiengesellschaft. Apparatus for demodulation of phase difference modulated data. 3,739,289, Cl. 329-104.000.

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Boggs, Jesse K., to Esso Research and Engineering Company. Tertiary alkylation of benzene at atomospheric pressure. 3,739,040, Cl. 260-671.00p.

Boggs, Jesse T., to Esso Research and Engineering Company. Selective tertiary alkylation of aromatic hydrocarbons. 3,739,039, Cl. 260-611.00r.

Bohler, Walter, to Perkin-Elmer Corporation, The. Device for compensating a derived signal. 3,739,164, Cl. 235-197.000.

Bohn, Gerald K.; and Weber, Roland E., to Physical Electronics Industries, Inc. Auger electron spectroscopy. 3,739,170, Cl. 250-49.5ae.

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Boulanger, Laurent A. Prefabricated building structures. 3,738,073, Cl. 52-282.000.
Bounds, Wallace A. Inertially operable electricity switches. 3,739,118, Cl. 200-61.45r.
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Braun, Eberhard; and Brodbeck, Werner, to Daimler-Benz Aktiengesellschaft. Rotary piston internal combustion engine with externally controlled ignition by means of a spark plug. 3,738,331, Cl. 123-8.090.
Braun, Richard E.; and Hopkins, Lionel G. Method of manufacturing multiple track, dual gap magnetic heads. 3,737,992, Cl. 29-603.000.
Brayman, Theron R. Reel for water skiing. 3,738,589, Cl. 242-96.000.
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Burland, Oliver J. Emergency vehicle warning light. 3,739,336, Cl. 340-50.000.
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Bush, George W.: *See—*
Szabo, Marton; and Bush, George W., 3,737,944.

Butter, Karl; and Knauer, Kuno, to Messerschmitt-Bolkow-Blohm, GmbH. Process for the production of regeneratively cooled rocket combustion chambers and thrust nozzle assemblies. 3,738,916, Cl. 204-9.000.

Bylund, Per Ake; and Mellgren, Gunnar, to Allmanna Svenska Elektriska Aktiebolaget. Semiconductor device having heat pipe cooling means. 3,739,234, Cl. 317-234.00r.

Byrd, Lucid Lincoln, to Carter Precision Electric Company. Method and apparatus for making electrical connector assemblies. 3,737,998, Cl. 29-627.000.

Byrd, Wallace E.: *See—*
Berry, James M.; Byrd, Wallace E.; Dillon, Ronald D.; Dunn, Carroll E.; and Martin, Sterling T., 3,738,812.

Cady, Walter G. Instrument for responding to mechanical vibration of acceleration and for converting the same into electric energy. 3,739,202, Cl. 310-8.300.

Cahill, Joseph A.; Meyers, Joseph A.; and Sauer, Richard W., to Atlantic Richfield Company. Production of nonionic detergents. 3,739,034, Cl. 260-615.00b.

Caldemeyer, Daniel F. Motor driven headrest and back for recliner chair. 3,738,706, Cl. 297-410.000.

Calhoun, John Charles; and Flegal, William Malcolm, to Western Electric Company, Incorporated. Method of and apparatus for measuring the temperature of a movable elongated conductor. 3,737,982, Cl. 29-573.000.

Callaghan, John David, to RCA Corporation. Antenna structures. 3,739,388, Cl. 343-726.000.

Camarota, John T. Flying saucer toy. 3,738,053, Cl. 46-74.00d.

Camiciotioli, Roberto; and Grossi, Giuseppe, to Societa Italiana Telecomunicazioni Siemens S.p.A. System for the remote supervision of multichannel PCM repeaters. 3,739,098, Cl. 179-15.0ad.

Camilleri, Charles F.: *See—*
Gusdorf, Walter; and Camilleri, Charles F., 3,738,287.

Campbell, George Thomas Richardson; and Wakamatsu, Moritomo, to Algoship International Limited. Oil tank heating apparatus. 3,738,305, Cl. 114-73.000.

Campbell, Graham S. Sun reflector. 3,738,740, Cl. 350-288.000.

Canada-Cities Service, Ltd.: *See—*
Kaminsky, Victor Paul, 3,738,930.

Candlin, John Paton; Maguire, James Edwar; and Wyatt, Ronald John, to Imperial Chemical Industries, Limited. Compositions for initating olefin polymerisation and the use thereof. 3,738,944, Cl. 252-431.00r.

Canon Kabushiki Kaisha: *See—*
Mitani, Taizo; and Shirashaki, Takayuki, 3,738,240.
Sugawara, Koboru; and Sawada, Takeshi, 3,739,204.
Uchiyama, Takashi; Ito, Tadashi; Matsuda, Mutsuhide; and Ogiso, Mitsutoshi, 3,738,237.
Yamaguchi, Isao; and Kato, Nori, 3,739,247.

Cappelen, Christian, Jr.; and Grimsrud, Lars. Method for the sterilization of a system for preparation of a liquid mixture. 3,738,382, Cl. 137-340.000.

Carborundum Company, The: *See—*
Long, William W., III, 3,738,521.

Carder Industries, Inc.: *See—*
Carder, William E., 3,738,010.

Carder, William E., to Carder Industries, Inc. Straight edge with nonslip inserts. 3,738,010, Cl. 33-107.000.

Cardinale, Albert J. Concealed windshield wiper well heater. 3,738,252, Cl. 98-2.100.

Carey, Raymond E.; and Robertson, Andy S., to AMF Incorporated. Adjustable tape path length. 3,739,363, Cl. 340-174.00l.

Carl-Zeiss-Stiftung, d/b/a Zeiss, Carl: *See—*
Glatzel, Erhard; and Konschack, Erwin, 3,738,739.

Carley, James A., to Los Angeles Miniature Products Inc. Elongate light block assembly lamp. 3,739,219, Cl. 313-278.000.

Carlson, Dana Peter; and West, Norman Eugene, to Du Pont de Nemours, E. I., and Company. Poly(ethylene/chlorotrifluoroethylene) and poly (ethylene/tetrafluoroethylene having improved high temperature properties. 3,738,923, Cl. 204-159.200.

Carlson, John T. Martin, 25% to Terryl K. Particle size distribution analysis. 3,739,180, Cl. 250-218.000.

Carlsson, Erik Herbert, to Aktiebolaget Overums Bruk. Cleat plate structures for caterpillar belts. 3,738,715, Cl. 305-56.000.

Carter, Arthur D., Sr. Adjustable saw guide. 3,738,211, Cl. 83-522.000.

Carter Precision Electric Company: *See—*
Byrd, Lucid Lincoln, 3,737,998.

Cartwright, Delmar G., to Bell Canada. Dial and multifrequency telephone system employing ringing and lamp flash signalling. 3,739,100, Cl. 179-18.0ad.

Cascade Corporation: *See—*
Didtel, Stuart R.; and Olson, Harland D., 3,738,520.

Case, Robert O., Jr.: *See—*
Burdic, William S.; and Case, Robert O., Jr., 3,739,380.

Casey, Charles H. Power operated cleaning device. 3,737,942, Cl. 15-339.000.

Cassano, James R.; and Smith, Charles E., to Xerox Corporation. Viewer printer apparatus. 3,738,744, Cl. 355-10.000.

Catalano, Joseph. Latch means. 3,738,061, Cl. 49-50.000.

Caterpillar Tractor Company: *See—*
Harris, George V., 3,738,418.
Hein, Allyn J.; Ruseff, Walter Z.; and Tribley, Gilbert, 3,738,779.

Cathey, Le Conte, to United States of America, Atomic Energy Comission. Self generating thermoelectric converter. 3,738,873, Cl. 136-202.000.

Cecchi, Carlo, to Fiat Societa per Azioni. Automatic scoop positioning device for mechanical shovel. 3,738,522, Cl. 214-764.000.

Cech, Robert E.: *See—*
Becker, Joseph J.; and Cech, Robert E., 3,738,876.

Celanese Corporation: *See—*
Soehngen, John W., 3,738,884.

Censi, Giorgio. Variable stroke multiple pump. 3,738,230, Cl. 92-13.300.

Centliver, Marion F.: *See—*
Karnes, Donovan; and Centliver, Marion F., 3,738,555.

Central Specialties Company: *See—*
Van Etta, David; and Ballenger, Robert J., 3,738,550.

Cerberus AG: *See—*
Muller, Peter, 3,739,365.

Chambers, Worthy L.: *See—*
Copeland, William M.; and Chambers, Worthy L., 3,738,616.

Champion International Corporation: *See—*
Eckard, Robert Lewis, 3,738,728.
Matzke, William A., 3,738,900.

Chandler Evans, Inc.: *See—*
Gebelein, Edward F., Jr.; and Dawes, Michael H., 3,739,156.

Chandra, Subhash; and Lambert, Raymond H., to General Electric Company. Varying area optical processing fourier analyzer. 3,738,731, Cl. 350-162.0sf.

Chaney, Robert L.; and Kelly, Michael A., to Hewlett-Packard Company. Analyzer employing magneto-optic rotation. 3,738,755, Cl. 356-117.000.

Chaney, Robert L., to Hewlett-Packard Company. Magneto-optic rotation analyzer. 3,738,756, Cl. 356-117.000.

Charms, Bernard L. Method of defibrillating a malfunctioning heart by means of electrodes located within the atrium. 3,738,370, Cl. 128-419.00d.

Charron, Charles S.: *See—*
Cornford, Arthur S.; and Charron, Charles S., 3,738,506.

Chatelon, Andre Edouard Joseph; and Regnier, Marc Andre, to International Standard Electric Corporation. Auxiliary circuit for analog to digital coder. 3,739,375, Cl. 340-347.0cc.

Chemical Products Corporation: *See—*
Barrett, Robert C., 3,738,938.

Chen, Kun-Chao C., to Burroughs Corporation. Tension releasing device. 3,738,189, Cl. 74-242.15r.

Cheng, Shu-Sing, to Kendall Company, The. Residual alkylating agent detector and method therefor. 3,738,811, Cl. 23-232.00r.

Cherba, Samuel: *See—*
Norman, Donald; and Cherba, Samuel, 3,738,651.

Cherry Electrical Products Corporation: *See—*
Long, Eric L.; and Cherry, Walter L., 3,739,127.

Cherry, Walter L.: *See—*
Long, Eric L.; and Cherry, Walter L., 3,739,127.

Chesley, Frank G. Medication container. 3,738,480, Cl. 206-42.000.

Chess, Samuel: *See—*
Anorga, Carlos J.; Chess, Samuel; and Lefferdink, Theodore B., 3,738,953.

Chesser, Billy G.: *See—*
Browning, William C.; Chesser, Billy G.; and Wood, Jerry L., 3,738,934.

Chevron Research Company: *See—*
Woo, Gar Lok, 3,738,935.

Chicago Bridge & Iron Company: *See—*
Hanway, John E., Jr., 3,738,289.
Harris, Arthur Winslow; and Adkins, Robert Louis, 3,738,205.
Madary, James Victor; and Davis, William A., 3,738,113.

Chicago Rawhide Manufacturing Company: *See—*
Andersen, Kare; Gabrys, Kenneth F.; and Ingo, Tyrone B., 3,738,669.

Child, Francis W., to University of Minnesota, The Regents of the, mesne. Pivoted disc-type heart valve. 3,737,919, Cl. 3-1.000.

Chilton, John Michael; and Jaffe, Donald, to Bell Telephone Laboratories, Incorporated. Technique for adjusting temperature coefficient of resistance of tantalum aluminum alloy films. 3,738,919, Cl. 204-37.00r.

Choinski, Graydon J.: *See—*
Berman, George A.; and Choinski, Graydon J., 3,738,380.

Chow, Sen-Te, to United States of America, Amry. Automatic bright source protection circuit and power supply circuit for an image intensifier. 3,739,178, Cl. 250-213.00v.

Christensen, Calvin J.: *See—*

Seiter, William A.; and Christensen, Calvin J., 3,739,226.

Christiansen, Bendt Andreas, to Andersen, Hans Christian. Apparatus for closing the toe of a stocking. 3,738,294, Cl. 112-121.150.

Chromatic Corporation, The: *See—*
Ganz, Walter C., 3,738,038.

Chrysler Corporation: *See—*
Hall, John F., 3,738,384.

Chu, Nan S.; and Jezl, James L., to Standard Oil Company. Block copolymers of anionically polymerized and free radical polymerized monomers. 3,739,042, Cl. 260-878.00b.

Chupp, John P., to Monsanto Company. Production of alphachlorothioamide derivatives. 3,739,024, Cl. 260-551.00s.

Ciba-Geigy AG: *See—*
Schmid, Rolf; and Fisch, Willy, 3,739,041.

Ciba-Geigy Corporation: *See—*
Bickel, Hans; and Kump, Wilhelm, 3,738,980.

Cimino, Dennis J.; Mench, John W.; and Pancoast, Leonidas H., Jr., to Eastman Kodak Company. Polyvinyl chlorendates. 3,738,970, Cl. 260-78.40d.

Citizen Watch Company Limited: *See—*
Osaka, Takatoshi, 3,738,470.

Clark, Hubert M.; and Berman, George A., to TRW Inc. Pump housing for use with top mounted or remote mounted reservoirs. 3,738,784, Cl. 418-270.000.

Clarke, Anthony J.: *See—*
Fishbein, John; Bell, Raymond W. H.; and Clarke, Anthony J., 3,738,947.

Cleereman, Kenneth J.: *See—*
Ayres, Ralph E.; Cleereman, Kenneth J.; and Schrenk, Walter J., 3,739,052.

Clements, Ralph E., to Barber-Colman Company. Capacitor fired thyristor. 3,739,198, Cl. 307-252.00b.

Clifford, Gilbert F.: *See—*
Way, Robert W.; Clifford, Gilbert F.; Kenkel, Robert W.; Odell, Arthur W.; and Smith, Donald F., 3,738,487.

Clinch, John Michael: *See—*
Karuhn, Richard F.; Davies, Reg.; and Clinch, John Michael, 3,739,258.

Clinton, Russell M.; and Puzniak, Thomas J., to Gulf Research & Development Company. Octane analyzer. 3,738,810, Cl. 23-230.0pc.

Cloete, Frankis Louis Dirk; and Streat, Michael, to National Research Development Corporation. Pulsed countercurrent liquid-solids contacting apparatus. 3,738,814, Cl. 23-270.000.

Coccagna, Edmund G., to Mohawk Data Sciences Corporation. Demodulating circuit employing phase shifting techniques. 3,739,288, Cl. 329-104.000.

Codet, Georgis; Dawans, Francois; de Charentenay, Francois-Xavier; and Teyssie, Philippe, to Institut Francais du Petrole, des Carburants et Lubrifiants. Organic compounds of the transition metals. 3,739,003, Cl. 260-439.00r.

Coffman, Alfred M., to Goodrich, B. F., Company, The. Interpolymers of acrylates, unsaturated acids and hydroxylated amides as pressure-sensitive adhesives. 3,738,971, Cl. 260-80.730.

Cohen, Morton; and Silverman, Elliott. Method and apparatus for applying orthodontic brackets and the like. 3,738,005, Cl. 32-14.00b.

Coin Acceptors, Inc.: *See—*
Lotspeich, Joseph A., 3,738,377.

Cokee, Jordan: *See—*
Packler, Mel A.; and Cokee, Jordan, 3,738,299.

Cole, George S.; Ritzenthaler, Richard L.; and Arnold, Don C. Diaphragm valves for liquids. 3,738,389, Cl. 137-636.100.

Coleman Company Inc., The: *See—*
Hill, Max Lee, 3,738,705.

Coleman, Owen W., Associate, Inc.: *See—*
Brown, Randolph F., 3,738,544.

Coleman, Theodore John; Jenkins, Richard Alan; and Ostling, William Delano, to Omark Industries, Inc. Rotatable mounting for boom type loaders. 3,738,500, Cl. 212-66.000.

Coleman, Vincent R., to Van Dam Company, The. Bar quench fixture. 3,738,629, Cl. 266-6.00s.

Colligan, Francis S. Method of communicating warning information via the intermediate frequency of a superheterodyne radio and/or television receiver. 3,739,283, Cl. 325-373.000.

Collins, John Frederick, to United States Borax & Chemical Corporation. Organic fluids of the borate-glycol type. 3,738,941, Cl. 252-389.000.

Collins Radio Company: *See—*
Stover, Harris A., 3,739,284.

Colmey, John C.: *See—*
Rash, Kenneth E., Jr.; Colmey, John C.; and Zanzig, Charles E., 3,738,844.

Colorado Valve Co.: *See—*
Parker, Joe B.; and Mc Casland, Thomas A., 3,738,388.

Colorcon Incorporated: *See—*
Signorino, Charles A., 3,738,952.

Colosimo, Louis E. Mobile air cleaning apparatus for pollution removal. 3,738,088, Cl. 55-104.000.

Coltman, John W., to Westinghouse Electric Corporation. System for viewing detected objects. 3,739,324, Cl. 340-3.00c.

Columbia Broadcasting System, Inc.: *See—*
Beiser, Leo, 3,739,296.

Colwell, Otha LeRoy, to Felt Products Mfg. Co. Thin laminated gasket. 3,738,558, Cl. 277-235.00b.

Combs, Ollah; and Lyons, Bob G., to National Cash Register Company, The. Printer for printing a color bar code. 3,738,263, Cl. 101-93.00c.

Coming Enterprises: *See—*
Fain, Robert P., 3,738,699.

Commander Industries, Inc.: *See—*
Harris, Elwyn Dean, 3,738,505.

Commercial Solvents Corporation: *See—*
Frump, John A., 3,738,992.

Commissariat a l'Energie Atomique: *See—*
Bujorklund, Gunnar; Borel, Joseph; and Marine, Jean, 3,739,353.
Negrou, Jacques, 3,739,199.

Commonwealth of Australia, The; care of the Secretary, Department of Supply: *See—*
Metcalfe, Kenneth A.; and Lowe, William H., 3,739,087.

Compagnie de Saint-Gobain: *See—*
Hanton, Daniel, 3,738,020.
Paymal, Jean, 3,738,895.

Compagnie Industrielle des Telecommunications: *See—*
Le Roy, Guy, 3,739,354.

Compagnie Industrielle des Telecommunications CIT-Alcatel: *See—*
Leonard, Didier, 3,739,102.

Conco Inc.: *See—*
Latall, Roy C., 3,739,089.

Consiglio Nazionale delle Ricerche: *See—*
De Rossi, Mario, 3,738,870.

Constable, Philip James, to Drayton Controls Limited. Multiple switch control assembly with multiple pushbutton interlock latch bar and safety switch. 3,739,110, Cl. 200-5.00r.

Contacts Incorporated: *See—*
Gwyn, Childress B., Jr., 3,737,999.

Container Corporation: *See—*
Howlett, Robert J.; and Miller, Ronald H., 3,738,604.

Container Corporation of America: *See—*
Helms, Khirhes Robert, 3,738,698.

Continental Gummi-Werke Aktiengesellschaft: *See—*
Heller, Karl Heinz; and Fischer, Hans Joachim, 3,738,429.
Rach, Heinz-Dieter; and Grollich, Ekkehard, 3,738,408.

Continental Machining Co., Inc.: *See—*
Yaple, Winfred E., 3,738,207.

Contois, Lawrence E.: *See—*
Merrill, Stewart H.; and Contois, Lawrence E., 3,738,833.

Control Data Corporation, mesne: *See—*
Stone, Eliot; and Patel, Pravin K., 3,738,818.

Cook, Brian Alfred, to Imperial Chemical Industries, Limited. Concentration process. 3,738,925, Cl. 204-180.00p.

Cool Industry (Patents) Limited: *See—*
Abbott, John, 3,738,534.

Cooper, Hamil W.: *See—*
Talkington, Carl M.; and Cooper, Hamil W., 3,739,364.

Cooper, Laurence C.; and Maxfield, E. Blair. Cutting table for rock. 3,738,349, Cl. 125-13.00r.

Copeland, John R.; and Reid, James F., to Great Atlantic & Pacific Tea Company, Inc. Data transmission system. 3,739,346, Cl. 340-172.500.

Copeland, William M.; and Chambers, Worthy L., to Sunbeam Corporation. Motor driven appliance. 3,738,616, Cl. 259-108.000.

Corcoran, John W., to Ampex Corporation. Optical tracking apparatus for read-out of high-density recording. 3,739,154, Cl. 235-61.11e.

Cornford, Arthur S.; and Charron, Charles S. Automatic storage system. 3,738,506, Cl. 214-16.40c.

Corning Glass Works: *See—*
Hollis, David L., 3,739,279.

Corris, Charles J.: *See—*
Pokrinchak, Jordan J.; and Corris, Charles J., 3,738,710.

Costales, Manuel; and Hakki, Moustafa I. Rotating ring drive for spinning machine. 3,738,094, Cl. 57-75.000.

Coster Tecnologie Speciali S.p.A.: *See—*
Ruscitti, Tomaso, 3,738,542.

Coughtrie, Thomas Robb. Cutting devices. 3,738,002, Cl. 30-251.000.

Courtney, William L.: *See—*
Ackley, Kenneth E.; and Courtney, William L., 3,738,565.

Courty, Albert, to Thomson-CSF. Ultrasonic flowmeters. 3,738,169, Cl. 73-194.00a.

Cox, Ernest P. Expandable hunting arrow. 3,738,657, Cl. 273-106.50b.

Coxon, George Eric; and Rees, John Michael, to Thorn Electrical Industries Limited. Production of tungsten halogen lamps. 3,738,729, Cl. 316-3.000.

Craftool Company, Inc., The: *See—*
Stars, William K., 3,738,395.

Craig, Fred A.; and Hudson, Allan M., to Thiokol Chemical Corporation. Cutoff mechanism for strip molding. 3,738,215, Cl. 83-289.000.

Crandall, Julian T., to Ashaway Line & Twine Mfg. Co. Manufacture and construction of strings. 3,738,096, Cl. 57-149.000.

Crane, Jacob: *See—*
Pryor, Michael J.; Crane, Jacob; and Winter, Joseph, 3,738,827.

Cranston, Benjamin Howell, to Western Electric Company, Incorporated. Explosive bonding of workpieces. 3,737,986, Cl. 29-589.000.

Cressman, George W., to General Electric Company. Arc-gap construction for flashing high-voltage photoflash lamps. 3,738,791, Cl. 431-95.000.

Criley, Ronald L.: *See—*

Russell, George K.; Criley, Ronald L.; and Frost, Richard H., 3,738,456.
Cristiani, Athos, to AMF Incorporated. Apparatus for feeding and splicing tape-shaped materials. 3,738,587, Cl. 242-58.100.
Crivello, James V., to General Electric Company. Polyimides from bis-maleimides and H_2S. 3,738,967, Cl. 260-78.0ua.
Crosfield Electronics Limited: *See—*
Pugsley, Peter C.; and Dobouny, Mouayed E., 3,739,078.
Cross Company, The: *See—*
Tourtellotte, Frederick, 3,738,478.
Cross, Tallyrand. Cutting die assembly with replaceable blades. 3,738,402, Cl. 144-197.000.
Crosswy, Frank L.: *See—*
Kalb, Henry T.; Crosswy, Frank L.; and Harding, Edward B., 3,738,750.
Crouzet: *See—*
Jullien, Jean, 3,738,060.
Cudd, Marvin L. Open-ended wrench with adjustable sockets. 3,738,203, Cl. 81-185.000.
Culver, Richard B., to Dresser Industries, Inc. Circuit for improving data in pulse detection systems. 3,739,172, Cl. 250-83.30r.
Cummins, Laurence M.; and Perry, Janet B.; deceased (by Perry, Blanche; legal representative), to Analytical Instrument Specialties. Apparatus for simultaneous application of samples to thin layer chromatography plates. 3,738,493, Cl. 210-198.00c.
Cunningham, Glenn P.; and Larson, John G., to Gulf Research & Development Company. Octane monitoring. 3,738,808, Cl. 23-230.0pc.
Cupler, John A., II. Apparatus for making solid diamond drills. 3,738,063, Cl. 51-50.00r.
Curcio, Edmund N., to Park-Ohio Industries, Inc. Induction heating apparatus for sealing tube-like containers. 3,738,892, Cl. 156-380.000.
Cutters Machine Company, Inc.: *See—*
Frederick, Cecil S., 3,738,640.
Cwikla, Joseph M., to Union Carbide Corporation. Flexible bag package article. 3,738,482, Cl. 206-57.00a.
Cwycyshyn, Walter; and Kitchen, Elwyn L., Jr., to General Motors Corporation. Vehicle positioning and restraint apparatus. 3,738,481, Cl. 206-46.00m.
Cyclone Seeder Company, The: *See—*
Speicher, Paul L., 3,738,546.
Cywinski, Norbert F., to Phillips Petroleum Company. Synthesis of unsaturated hydrocarbons. 3,739,037, Cl. 260-666.0xa.
Czepiga, Edward F. Rider-actuated toy. 3,738,671, Cl. 280-1.183.
Da Silveira, Miguel: *See—*
Perot, Gilbert; Labin, Emile; and Da Silveira, Miguel, 3,739,383.
D'Agostino, Michael, mesne: *See—*
D'Agostino, Michael V., 3,739,200.
D'Agostino, Michael V., to D'Agostino, Michael, mesne, Lief, Arthur, Harrison, Hershel and Armour, James. FET interface circuit. 3,739,200, Cl. 307-304.000.
Dahm, Manfred: *See—*
Oertel, Gunter; Dahm, Manfred; Holtschmidt, Hans; and Roegler, Manfred, 3,739,014.
Daicel Ltd.: *See—*
Moriyama, Kizyu; and Takahashi, Sakae, 3,738,972.
Daimler-Benz Aktiengesellschaft: *See—*
Braun, Eberhard; and Brodbeck, Werner, 3,738,331.
Hoffmann, Heinrich, 3,738,335.
Daiwa Can Co. Ltd.: *See—*
Kagami, Takayoshi, 3,738,528.
Daley, Erika. Tubular assembly having indicia displaying means. 3,738,037, Cl. 40-68.000.
Dall'Asta, Leone: *See—*
Gradnik, Boris; Pedrazzoli, Andrea; and Dall'Asta, Leone, 3,739,030.
Dally, James W.; and Panizza, Gustavo A., to United States of America, Army. Fatigue damage indicator. 3,738,162, Cl. 73-88.50r.
Dalton, Robert L., to R. D. Products, Inc. Process of making identification cards. 3,738,836, Cl. 96-43.000.
Dalton, Thomas B., to Westran Corporation. Solenoid actuated switching device for electric motor control circuit. 3,739,309, Cl. 335-181.000.
Dalton, Virgil D. Dolly for moving vehicles. 3,738,672, Cl. 280-3.000.
D'Amico, John Joseph, to Monsanto Company. Bis dithiocarbanilates. 3,739,006, Cl. 260-455.00a.
Damm, Carl A.: *See—*
Halpern, William J.; and Damm, Carl A., 3,738,222.
Daniels Manufacturing Corporation: *See—*
Holmes, Marion B.; and Ganzert, Albert E., 3,738,150.
Danner, Wilson E.: *See—*
Hammes, Paul A.; Everson, Charles W.; and Danner, Wilson E., 3,738,842.
Darnell, Byron G.: *See—*
McClain, James E.; and Darnell, Byron G., 3,739,115.
Data Time, Inc.: *See—*
Stalp, Bernard J., 3,739,368.
Datatype Corporation: *See—*
Bell, Ronald I.; Snyder, David E.; and Hendrickson, Donald Carl, 3,738,643.
Daugherty, Ellsworth W.; Erhard, Albert E.; and Drobnick, James L., to Molybdenum Corporation of America. Process for the recovery of rhenium and molybdenum values from molybdenite concentrate. 3,739,057, Cl. 423-50.000.
David, Walfried, to Bopp & Reuther GmbH. Structure with protective covering against ambient influences. 3,738,383, Cl. 137-381.000.
Davidsohn, Uryon S., to Motorola, Inc. Semiconductor devices. 3,738,877, Cl. 148-175.000.
Davidson, Albin A.: *See—*
Olson, Buford W., Sr.; Nelson, Eldrid W.; and Davidson, Albin A., 3,738,285.
Davies, Reg.: *See—*
Karuhn, Richard F.; Davies, Reg.; and Clinch, John Michael, 3,739,258.
Karuhn, Richard F.; Davies, Reg; and Kaye, Brian Howard, 3,739,268.
Davis, Albert D. Method and apparatus for processing hides. 3,737,949, Cl. 17-21.000.
Davis, Bayard C., to Sensor Dynamics, Inc. Continuous manufacture of shielded conductors. 3,737,997, Cl. 29-624.000.
Davis, Billy W.: *See—*
Kerr, Wayne L.; Duggan, Thomas W.; and Davis, Billy W., 3,739,326.
Davis, David C., Jr.: *See—*
Burdette, William M., Jr.; and Davis, David C., Jr., 3,739,349.
Davis, Donovan C., to Hoffman Electronics Corporation. Coherent pulse doppler altimeter. 3,739,379, Cl. 343-7.300.
Davis, Farris L.; and Brown, Daniel D., to Union Special Machine Company, mesne. Automatically adjustable trimming mechanism. 3,738,295, Cl. 112-126.000.
Davis, George Alvin. Rocking bed. 3,737,924, Cl. 5-108.000.
Davis, Raleigh F. Device for punching holes in metal tubes. 3,738,209, Cl. 83-98.000.
Davis, Robert D.; Meyer, Theodore N.; and Blizzard, Roy L., to Plasmachem, Inc. Method and apparatus for production of metallic powders. 3,738,824, Cl. 75-.50b.
Davis, William A.: *See—*
Madary, James Victor; and Davis, William A., 3,738,113.
Davis, William F.: *See—*
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Dawans, Francois: *See—*
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Dawes, Michael H.: *See—*
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Wagner, William T., 3,738,269.
Dayger, Jonas E.; Dowd, Albert A.; and Vrablic, Joseph A., to International Business Machines Corporation. Electromagnetic actuating means for print hammers. 3,738,262, Cl. 101-93.00c.
De Bleyker, James R.; and Hickox, William A., to General Electric Company. Electric lamp base end structure. 3,739,221, Cl. 313-318.000.
de Charentenay, Francois-Xavier: *See—*
Codet, Georgis; Dawans, Francois; de Charentenay, Francois-Xavier; and Teyssie, Philippe, 3,739,003.
De Furiz, Paul. Highway safety aid. 3,738,039, Cl. 40-129.00c.
De Grott, Harold J.: *See—*
Fadden, Donald K.; and De Grott, Harold J., 3,738,191.
De Jong, Maarten C., to Stanley Works, The. Snap-in vial retainers. 3,738,015, Cl. 33-379.000.
De Noyer, Donald B., to Allis-Chalmers Corporation. Nozzle adjusting arrangement for a papermaking machine headbox. 3,738,910, Cl. 162-347.000.
De Puy, Robert P., to General Electric Company. Direct current measuring system. 3,739,274, Cl. 324-120.000.
De Rossi, Mario, to Consiglio Nazionale delle Ricerche. Storage batteries containing zinc halide in an aqueous solution of the type having a soluble cathode and a dissolved anode. 3,738,870, Cl. 136-22.000.
De Souza, David: *See—*
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De Vaulx, Joseph: *See—*
Koelbel, Robert; De Vaulx, Joseph; Gillet, Roger; and Lehuen, Christian, 3,739,212.
Debare, Jacques, to Societe Francaise d'Equipement Menager. Pumping device, especially for water supply. 3,738,776, Cl. 417-38.000.
Deckert, Dale I. Roller for mounting on the tires of a tractor. 3,738,407, Cl. 152-175.000.
Deere & Company: *See—*
Fletcher, Edward Horton, 3,738,111.
Deering Milliken Research Corporation: *See—*
Ingham, Robert M., 3,738,093.
Reynolds, Leslie E., 3,738,124.
Deese, Samuel H., to American Consolidated Industries, Inc. Vehicle drive assembly. 3,738,186, Cl. 74-191.000.
Delgado, Maria Louisa: *See—*
Sandler, Stanley Robert; and Delgado, Maria Louisa, 3,738,986.
DeLuca, Hector F., to Wisconsin Alumni Research Foundation. 25,26-Dihydro xycholecalciferol. 3,739,001, Cl. 260-397.200.
Demny, Thomas Casimir; and Scannell, James Parnell, to Hoffmann-La Roche Inc. L-2-amino-4-methoxy-trans-3-butenoic acid. 3,739,022, Cl. 260-534.00m.
Denkowski, Walter J.: *See—*
Ball, Russell C., Jr.; Denkowski, Walter J.; Wadsworth, Kenneth; and Hayashi, Chihiro, 3,738,183.

Denney, Jerry W., to American Monitor Corporation. Glucose assay and reagents therefor. 3,738,809, Cl. 23-230.00b.

Deserno, Peter; Kauderer, Friedrich; and Prost, Hans, to Siemens Aktiengesellschaft. System for jamming wireless communications. 3,739,281, Cl. 325-132.000.

Deutsch, Peter R.: *See—*
Poux, Robert J.; and Deutsch, Peter R., 3,738,420.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Reinhardt, Helmut; Brandt, Bernd; and Peters, Albert, 3,738,785.

Di Fiore, Lucio; Divo, Claudio; and Ghirga, Marcello, to Societa' Italiana Resine S.p.A. Method of separating vinyl acetate from liquid mixtures with plural distillations and side stream phase separation. 3,738,915, Cl. 203-39.000.

Diamond International Corporation: *See—*
Keen, Everett M.; and Siciliano, Anthony J., 3,738,324.

Dickerson, Henry F., 1/3 to Tampa Brass & Aluminum Corporation, mesne and 1/3 to Reynolds, Frank. Thread cutting attachment for lathes. 3,738,226, Cl. 90-11.640.

Dickey-john Corporation: *See—*
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Didier-Werke AG: *See—*
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Didtel, Stuart R.; and Olson, Harland D., to Cascade Corporation. Clamp mechanism with trailing arm control. 3,738,520, Cl. 214-653.000.

Dieter, Helmut. Article holding device. 3,738,551, Cl. 224-26.00r.

Dietzen, William H.; Lessig, William R., III; Alsruhe, Leonard U.; and Younginer, Howard I., to Black and Decker Manufacturing Company. Blade mounting assembly for jig saw. 3,738,003, Cl. 30-392.000.

Dillon, Ronald D.: *See—*
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Dinnerstein, Albert J.: *See—*
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Dinnerstein, Albert J., to Metafrome Corporation. Aquarium. 3,738,319, Cl. 119-5.000.

Disbrow, Wendell E.: *See—*
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Dittrich, Wolfgang; and Gohde, Wolfgang. Apparatus and methods for flow photometry of particles of a dispersion. 3,738,759, Cl. 356-208.000.

Divigard, Albert J., to Evans, Chandler, Inc. Temperature compensated pneumatic control system. 3,738,609, Cl. 251-129.000.

Divo, Claudio: *See—*
Di Fiore, Lucio; Divo, Claudio; and Ghirga, Marcello, 3,738,915.

Dixon, Kenneth Wayne: *See—*
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Dobinson, Frank; and Silver, Frank M., to Monsanto Company. Aromatic polyamides derived from a mixture of aromatic diamines containing 4,4-diamino-oxanilide. 3,738,964, Cl. 260-47.0cz.

Dobouny, Mouayed E.: *See—*
Pugsley, Peter C.; and Dobouny, Mouayed E., 3,739,078.

Dockery, Denzel J. Under-gravel aquarium filter. 3,738,491, Cl. 210-169.000.

Doi, Tadashi; Ohtsuka, Shunzo; and Arai, Sumio, to Kao Soap Co., Ltd. Cationic bituminous emulsion. 3,738,852, Cl. 106-277.000.

Donnadieu, Henry, to Institut de Recherches de la Siderurgie Francaise. Testing device for inspecting an object. 3,738,159, Cl. 73-67.900.

Donovan, Bradford P.; and Wood, Lorin A., to McDonnell Douglas Corporation. Lift control mechanism. 3,738,594, Cl. 244-76.00r.

Dornberger, Georg C., to Western Electric Company, Incorporated. Method of and system for measuring the speed and length of a moving elongated article. 3,739,276, Cl. 324-161.000.

Dotson, Billy R.; Morrison, Edward D.; and Williams, Robert F., Jr., to Eastman Kodak Company. Process for the solvent casting of cellulose films using radiation, and products thereof. 3,738,924, Cl. 204-159.120.

Doudet, Michel, to SECIM, mesne. Inverse drawing presses. 3,738,144, Cl. 72-255.000.

Doumas, George C. Adjustable tobacco smoke filter device. 3,738,375, Cl. 131-10.300.

Dover Corporation: *See—*
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Dow Chemical Company: *See—*
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Dow Chemical Company, The: *See—*
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Barstow, Ormond E., 3,738,757.
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Dowell, Frederick Sidney, to Dunlop Company Limited, The. Friction mechanisms. 3,738,457, Cl. 188-218.0xl.

Doyotte, Claude Charles: *See—*
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Drabik, Walter, to General Motors Corporation. Rectifier assembly. 3,739,209, Cl. 310-64.000.

Drayton Controls Limited: *See—*
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Dresser Industries, Inc.: *See—*
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Drever, Robert G.: *See—*
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Drinkard, William Charles, Jr., to Du Pont de Nemours, E. I., and Company. Catalytic isomerization of 2-methyl-3-butenenitrile to linear pentenenitriles. 3,739,011, Cl. 260-465.900.

Driscoll, Walter, to Warnaro Inc. Brassiere hanger and display system. 3,738,549, Cl. 223-85.000.

Drobnick, James L.: *See—*
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Drott, Helmut: *See—*
Brumm, Karl; Moos, Jakob; Weber, Jorg; Drott, Helmut; and Stelzig, Russelsheim, 3,738,197.

Drouin, Andre H., to Rockwell Manufacturing Company. Subsidence wellhead assembly and method. 3,738,426, Cl. 166-315.000.

Dryden, Gale E. Unitary disposable circle absorption canister assembly. 3,738,360, Cl. 128-188.000.

Dryden, Hugh L., Jr.; and Wieczorek, Joseph, to Searle, G. D., & Co. Process for the preparation of 3-(3β, 17β-dihydroxyandrost-5-en-11α-yl) propionic acid γ-lactone. 3,738,983, Cl. 260-239.570.

Du Pont de Nemours, E. I., and Company: *See—*
Adams, Charles D.; and Schlatter, Rudolph, 3,738,995.
Altau, Karl, 3,738,864.
Bellis, Harold Edward, 3,738,849.
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Bristol, John E., 3,738,975.
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Iler, Ralph K,, 3,738,957.
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Reilly, Edward L., 3,739,017.
Wald, David K., 3,739,044.
Waring, Robert Kerr, Jr., 3,739,359.

Duberley, Albert, to National Research Development Corporation. Ship stabilisation apparatus. 3,738,304, Cl. 114-126.000.

Duchscher, James L. Bait and hook holder. 3,738,048, Cl. 43-44.200.

Duggan, Thomas W.: *See—*
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Thompson, Robert M.; and Duling, Irl N., 3,738,965.

Dunham-Bush Inc.: *See—*
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Dunlop Holdings Limited: *See—*
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Dunn, Carroll E.: *See—*
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Dunnom, Donald D., to PPG Industries, Inc. Rubber compositions. 3,738,948, Cl. 260-3.000.

Duperow, Donald E.: *See—*
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Duro Paper Bag Manufacturing Company: *See—*
Gould, James J., 3,737,945.

Duthion, Louis; and Doyotte, Claude Charles, to Bertin & Cie. Method and installation for braking a moving body. 3,738,282, Cl. 104-249.000.

Dutsen, Arthur C., Jr. Power unit for plate glass handling apparatus. 3,738,518, Cl. 214-650.0sg.

Duvall, Francis W., to United States of America, Army. Sector defense system. 3,738,593, Cl. 244-314.000.

Dyckerhoff & Widmann Aktiengesellschaft, Firma: *See—*
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Dynair Limited: *See—*
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Dzhanelidze, Vazha Venediktovich: *See—*
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Earl, T. Desmond; and Paxhia, Vincent B., to Textron, Inc. Aircraft undercarriage. 3,738,597, Cl. 244-102.00r.

Eastman Kodak Company: *See—*
Cimino, Dennis J.; Mench, John W.; and Pancoast, Leonidas H., Jr., 3,738,970.
Dotson, Billy R.; Morrison, Edward D.; and Williams, Robert F., Jr., 3,738,924.
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Merrill, Stewart H.; and Contois, Lawrence E., 3,738,833.
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Ebauches Electroniques S.A.: *See—*
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Ebert, Norman J. Parts and tool catching device for outboard motors. 3,738,635, Cl. 269-15.000.

Ebstrom, Soren E. H., to Gardner-Denver Company. Capacity control value for screw compressor. 3,738,780, Cl. 417-281.000.

Eckard, Robert Lewis, to Champion International Corporation. Removable lock panel for cabinet and furniture. 3,738,728, Cl. 312-330.000.

Eclipse Sleep Products, Inc.: *See—*
Kline, John C.; and Kronman, Albert F., 3,737,927.

Ecomard, Andre: *See—*
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Economos, George; Ford, David E., Jr.; and Fillar, John A., to Allen-Bradley Company. Heat dissipating insulating mounting. 3,738,422, Cl. 165-80.000.

Edelman, Alfred E. Bone implant and method of implantation. 3,738,004, Cl. 32-10.00a.

Edelman, Alfred E. Expansible dental implant. 3,738,008, Cl. 32-10.00a.

Edelson, Andrew C. Electronic combination lock. 3,739,233, Cl. 317-134.000.

Edler, Bruno. Apparatus for positioning a tread band on a vehicle tyre. 3,738,893, Cl. 156-394.000.

Edmond, William G. Mass transfer device and method of making same. 3,738,813, Cl. 23-258.500.

Edwards, James D. Apparatus for loading and unloading printing machines. 3,738,519, Cl. 214-652.000.

Eftax, Daniel S. P.: *See—*
Bozer, Keith B.; Brown, Lloyd H.; and Eftax, Daniel S. P., 3,738,955.

Ege, Hans, to Underwriters Safety Devices Co. Safety disconnect switch. 3,739,109, Cl. 200-4.000.

E.G.O. Elektro-Gerate Blanc u. Fischer Kommandit Gesellschaft: *See—*
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Eifrid, Stephen. Container. 3,738,563, Cl. 229-23.0bt.

Eiler, Peter, to Gottwald, Leo, K.G. Vehicle chassis frame. 3,738,442, Cl. 180-64.00r.

Eilingsfeld, Heinz: *See—*
Adolphi, Heinrich; Eilingsfeld, Heinz; Patsch, Manfred; and Schaffner, Ernst, 3,739,045.

El-Hasan, Hasan Afif; and Packard, Roger Erwin, to Burroughs Corporation. Method and apparatus for fault-testing binary circuit subsystems. 3,739,160, Cl. 235-153.0ac.

Elco Industries, Inc.: *See—*
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Electro-Mechanical Instrument Co., Inc.: *See—*
MacKenzie, Elbert K., 3,739,275.

Electroacustic Gesellschaft m.b.H.: *See—*
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Elian, Arthur: *See—*
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Ellinghause, Edgar A.; and Johnson, George B., to Interstate Drop Forge Co. Power control circuit for resistance heating moving conductors. 3,739,132, Cl. 219-50.000.

Ellis, Robert O., to Atlas Pacific Engineering Company. Apple orientor. 3,738,474, Cl. 198-33.0aa.

Ellner, Edwin, to Better Packages, Inc. Digital readout scale with actuated poise. 3,738,438, Cl. 177-25.000.

Elmer, Arthur Ernest Henry, to Dynair Limited. Wax capsule valves. 3,738,571, Cl. 236-100.000.

Eltra Corporation: *See—*
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Emery Industries, Inc.: *See—*
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Engel, Ignaz, to Friedmann, Alex, Kommanditgesellschaft. Air conditioner for railroad vehicles. 3,738,117, Cl. 62-173.000.

Engelmann, Herbert F., to Engelmann Microwave Company. Coaxial attenuator assembly having cross-shaped alternator element. 3,739,305, Cl. 333-81.00a.

Engelmann Microwave Company: *See—*
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Engrenages et Reducteurs (Engrenages Citroen et Etablissements Robert Messian Reunis): *See—*
Henriot, Georges; and Engrenages et Reducteurs (Engrenages Citroen et Etablissements Robert Messian Reunis), 3,738,190.

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Ennis, Bobbey G. Aquarium aerator. 3,738,620, Cl. 261-6.000.

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Environment/One Corporation: *See—*
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Erdman, William Charles; and Schmidt, Paul Felix, to Bell Telephone Laboratories, Incorporated. Anisothropic etching of silicon and germanium. 3,738,881, Cl. 156-17.000.

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Ermold, Edgar; Schwartz-Domke, Hans F. W.; Scheidig, Helmut; and Redel, Karl-Georg, to Leybold-Heraeus Verwaltung GmbH. Electrode remelting arrangement. 3,739,066, Cl. 13-9.000.

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Eschelbach, Richard E., to Magnavox Company, The. Magneto-optical signal processor. 3,739,362, Cl. 340-174.10m.

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Esmond, William G. Exchange device. 3,738,495, Cl. 210-321.000.

Esso Research and Engineering Company: *See—*
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Evans, Chandler, Inc.: *See—*
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Evans, Evan Franklin; and Nash, John Barry, to Du Pont de Nemours, E. I., and Company. Draw/relax/anneal process for polyesters. 3,739,056, Cl. 264-290.00t.

Everest, Frank G. Rangefinders. 3,738,749, Cl. 356-5.000.

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Eyre, Frank W.; and Groundwater, Fergus M., to United States of America, Navy. Sabot for sub-calibre projectile. 3,738,279, Cl. 102-94.000.

Eyzat, Pierre; Ecomard, Andre; Stephant, Claude; and Ghersi, Jean-Claude, to Institut Francais du Petrole des Carburants et Lubrifiants. Compression-ignition engine. 3,738,332, Cl. 123-32.00r.

Fabert, Herman A., Jr., to Abex Corporation. Hammer for hammer mills. 3,738,586, Cl. 241-195.000.

Factory Mutual Research Corporation: *See—*
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Fadden, Donald K.; and De Grott, Harold J., to International Harvester Company. Friction brake for a hydraulic draft control lever. 3,738,191, Cl. 74-531.000.
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Fairbanks, Henry N., to Itek Corporation. Cutting mechanism. 3,738,213, Cl. 83-589.000.
Falk, Morris, to Fort Lock Corporation. System for master keying axial pin tumbler locks. 3,738,136, Cl. 70-363.000.
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Farr, Richard S., to Farr Company. Emission reduction system. 3,738,334, Cl. 123-34.00a.
Farrell, John M., to General Motors Corporation. Permanent magnet armature valve. 3,738,578, Cl. 239-585.000.
Farrell, John P.; and O'Connell, Edward P., to United States of America, Air Force. Gross leak vacuum and pressure chamber assembly. 3,738,158, Cl. 73-40.700.
Fathauer, George H., to Dickey-john Corporation. Slow rotational speed alarm. 3,739,367, Cl. 340-271.000.
Faul, Joseph C.: *See—*
White, Douglas F.; Scadron, Marvin D.; and Faul, Joseph C., 3,738,167.
Fawn Engineering Corporation: *See—*
Wittern, Francis A.; and Woodley, Warren D. (said Woodley assor. to), 3,738,325.
Febres, Vasco Altuve. Recoilless firearm and cartridge therefor. 3,738,219, Cl. 89-1.703.
Fedders Corporation: *See—*
Woehler, Harold L., 3,739,145.
Feddick, Earl W.; and Wassmann, Gustane, to Victor Comptometer Corporation. Magnetic pool ball. 3,738,655, Cl. 273-59.00a.
Fee, Andrew R.: *See—*
Lucke, Charles H., Jr.; and Fee, Andrew R., 3,738,161.
Feiler, William A., Jr., to Monsanto Company. Process for the prevention of corrosion. 3,738,806, Cl. 21-2.700.
Fein, Marvin M.: *See—*
Bellisio, Arthur A.; Psyras, Hippocrates G.; and Fein, Marvin M., 3,738,086.
Fein, Marvin M.; and Paustian, John E., to Thiokol Chemical Corporation. Process for preparing hydrozinium diperchlorate. 3,739,059, Cl. 423-386.000.
Feldix GmbH: *See—*
Wehde, Heinz, 3,739,248.
Felt Products Mfg. Co.: *See—*
Colwell, Otha LeRoy, 3,738,558.
Feng, Chung Liao, to Selas Corporation of America. Industrial burner. 3,738,792, Cl. 431-158.000.
Fenner, J. H., & Co., Limited: *See—*
Anderson, Arthur Ernest; Roberts, Michael John; and Wright, Peter John, 3,738,859.
Fernseh G.m.b.H.: *See—*
Bachmann, Horst, 3,739,080.
Hess, Heinz, 3,739,103.
Legler, Ernst, 3,739,092.
Ferranti, Limited: *See—*
Gribble, Maurice Woolmer, 3,738,764.
Fesco, John E., to Studley Paper Company, Inc. Vacuum cleaner filter bag. 3,738,091, Cl. 55-367.000.
Fetzer, Hans, to Rex Asbestwerke Graf Von Rex KG. Method of producing purified asbestos structures. 3,738,805, Cl. 8-137.500.
Fiat Societa per Azioni: *See—*
Cecchi, Carlo, 3,738,522.
Peruglia, Marco, 3,738,607.
Peruglia, Marco, 3,738,713.
Sola, Giuseppe, 3,738,180.
Fiber Controls Corporation: *See—*
Hullett, David F.; Lytton, Kenneth G.; and Miller, George J., 3,738,476.
Fiber Industries, Inc.: *See—*
Shemdin, Byar Hazim, 3,738,789.
Fillar, John A.: *See—*
Economos, George; Ford, David E., Jr.; and Fillar, John A., 3,738,422.
Fimbault, Serge. Apparatus for automatically distributing liquid feed rations. 3,738,532, Cl. 222-63.000.
Fine, Hyman M.; and McKearney, James L. Seeder device. 3,738,530, Cl. 221-211.000.
Finsterwalder, Klemens, to Dyckerhoff & Widmann Aktiengesellschaft, Firma. Tension element for constructing a prestressed tension anchor in the ground. 3,738,071, Cl. 52-155.000.
Firemaster Extinguisher Limited: *See—*
Appleton, Ronald John Walter, 3,738,311.
Firth, David. Split contractible bushing. 3,738,691, Cl. 287-52.060.
Fisch, Willy: *See—*
Schmid, Rolf; and Fisch, Willy, 3,739,041.
Fischer, Hans Joachim: *See—*
Heller, Karl Heinz; and Fischer, Hans Joachim, 3,738,429.
Fischer, Helmut: *See—*
Bahlinger, Walter; Vogt, Herbert; and Fischer, Helmut, 3,739,210.
Fischer, Karl; and Schreder, Felix, to E.G.O. Elektro-Gerate Blanc u. Fischer Kommandit Gesellschaft. Cooking appliances. 3,739,149, Cl. 219-445.000.
Fish, James F.; and Parks, Bruce C., to United States of America, Navy. Photographic module having acoustic transducer. 3,738,248, Cl. 95-86.000.
Fishbein, John; Bell, Raymond W. H.; and Clarke, Anthony J., to Dunlop Holdings Limited. Process for making flame retarded polyurethanes foam. 3,738,947, Cl. 260-2.5am.
Fisher, Martin Allen. Final approach timer. 3,738,166, Cl. 73-178.00t.
Fisher, Michael H., to Merck & Co., Inc. 2-Cyano-polyhalobenzimidazoles. 3,738,994, Cl. 260-309.200.
Fitzsimons, Alan R.; and Mazac, Frank P., to San/Bar Electronics Corporation. Long line adapter circuit. 3,739,099, Cl. 179-16.00f.
Flachglas AG Delog-Detag: *See—*
Glaser, Hans Joachim; and Beckmann, Horst, 3,738,928.
Flajole, Earl J. Cargo container mounting. 3,738,302, Cl. 114-72.000.
Flanagan, William H., to Nexus, Inc. Strain relief member and method of manufacturing same. 3,739,320, Cl. 339-103.00r.
Flegal, William Malcolm: *See—*
Calhoun, John Charles; and Flegal, William Malcolm, 3,737,982.
Fleissner GmbH: *See—*
Fleissner, Heinz, 3,738,423.
Fleissner, Heinz, to Fleissner GmbH. Godet for drawing units and roller dryers used for treating man-made fibers. 3,738,423, Cl. 165-89.000.
Fletcher, Edward Horton, to Deere & Company. Variable displacement pump control system. 3,738,111, Cl. 60-452.000.
Fletcher Sutcliffe Wild Limited: *See—*
Smith, David Beaumont, 3,738,605.
Floessel, Dieter, to Aktiengesellschaft Brown, Boveri & Cie. Insulation gas-filled tubular casing structure for high-voltage conductor. 3,739,074, Cl. 174-28.000.
Flory, Donald M., to General Motors Corporation. Anti-lock brake system. 3,738,712, Cl. 303-21.00f.
FMC Corporation: *See—*
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Nechine, Leonard M., 3,738,628.
Foamat Foods Corporated: *See—*
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Folkens, Dieter: *See—*
Sobottka, Dieter; and Folkens, Dieter, 3,738,264.
Foote, Kenneth R.: *See—*
Griffin, William C.; Barker, Lynn; and Foote, Kenneth R., 3,738,277.
Forbes, Donald F., to United States of America, Navy. Phase control circuits. 3,739,351, Cl. 340-172.500.
Forcella, Peter Werner: *See—*
Manfre, Ben Louis; and Forcella, Peter Werner, 3,738,257.
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Ford, Geoffrey Ewart; and Waite, Philip Sidney, to Fords (Finsbury) Limited. Cap making machines. 3,738,147, Cl. 72-344.000.
Fords (Finsbury) Limited: *See—*
Ford, Geoffrey Ewart; and Waite, Philip Sidney, 3,738,147.
Foremost-McKesson, Inc.: *See—*
Rash, Kenneth E., Jr.; Colmey, John C.; and Zanzig, Charles E., 3,738,844.
Forg, John H.; and Payet, George L., to McGraw-Edison Company. Durable press method and apparatus. 3,738,019, Cl. 34-210.000.
Forni, Jay S. Fitting for asbestos cement pipe. 3,738,689, Cl. 285-55.000.
Forsberg, Charles A., to Tektronix, Inc. Cursor for use in performing graphic input in a display. 3,739,347, Cl. 340-172.500.
Fort Lock Corporation: *See—*
Falk, Morris, 3,738,136.
Foster, Alan, to U.S. Philips Corporation. Triac. 3,739,242, Cl. 317-235.000.
Foster Brothers Manufacturing Company, The: *See—*
Warner, Worthy John, 3,737,922.
Foster, Edwin E. Compound curved spring. 3,738,634, Cl. 267-156.000.
Foster, Norman, to British-American Tobacco Company Limited. Flexible packages. 3,738,566, Cl. 229-62.000.
Fournie, Thomas A. Slide projector. 3,738,741, Cl. 353-20.000.
Frankovich, John H.; and Wunderlich, Donald K., to Atlantic Richfield Company. Method for treating synthetic crude oil for pour point reduction. 3,738,931, Cl. 208-67.000.
Franz, Helmut, to PPG Industries, Inc. Removal of metal containing deposits from non-metallic substrates. 3,738,867, Cl. 134-2.000.
Franz, Raymond A.; Montgomery, Phillip D.; and Gebhart, Herbert J., Jr., to Monsanto Company. Stilbene production. 3,739,038, Cl. 260-668.00r.
Fraser, Warren H., to Worthington Corporation. Centrifugal pump with concrete volute. 3,738,782, Cl. 417-424.000.

Frederick, Cecil S., to Cutters Machine Company, Inc. Catcher mechanism for the spreading of quilting material. 3,738,640, Cl. 270-31.000.

Freeman, John A.; and De Souza, David, to Microsystems International Limited. Static bipolar to MOS interface circuit. 3,739,194, Cl. 307-214.000.

Frenken, Hans: *See—*
Herzhoff, Peter; Gref, Hans; Schweicher, Wolfgang; Heidenreich, Max; and Frenken, Hans, 3,738,018.

Frey, Robert R., to Richardson-Merrell Inc. Preparation of cooked candies. 3,738,843, Cl. 99-134.00r.

Friedmann, Alex, Kommanditgesellschaft: *See—*
Engel, Ignaz, 3,738,117.

Frobosilo, Raymond C.; and Levine, Samuel W. Retractable barrier. 3,738,413, Cl. 160-35.000.

Froehling, Paul H., to Johnson Service Company. Common wire compensation circuit. 3,739,188, Cl. 307-103.000.

Frohock, Millard M., Jr.; and McAdam, William E., Jr., to Hughes Aircraft Company. Ballistic elevation angle generator. 3,739,152, Cl. 235-61.50e.

Frost Engineering Development Corporation: *See—*
Russell, George K.; Criley, Ronald L.; and Frost, Richard H., 3,738,456.

Frost, Richard H.: *See—*
Russell, George K.; Criley, Ronald L.; and Frost, Richard H., 3,738,456.

Frulla, Floro F.; Odinak, Alec; and Sayigh, Adnan A., to Upjohn Company, The. Conversion of scrap polyurethane foam to polyol. 3,738,946, Cl. 260-2.300.

Frump, John A., to Commercial Solvents Corporation. 1-Aza-5-hydroxymethyl-3,7-dioxibicyclo-[3, 3,0]-octane. 3,738,992, Cl. 260-307.00f.

Fryd, Michael; and Ludlow, John L., to Du Pont de Nemours, E. I., and Company. Low temperature polymerization process. 3,739,043, Cl. 260-885.000.

Fryrear, William A., Jr.; and Metcalf, Joseph R. Horseshoeing. 3,738,427, Cl. 168-4.000.

Fuchs, Francis J., Jr., to Western Electric Company, Incorporated. Continuous material feeding and deformation process. 3,738,138, Cl. 72-60.000.

Fuchs, Francis J., Jr., to Western Electric Company, Incorporated. Apparatus and method for continous material feeding and deformation process. 3,738,145, Cl. 72-270.000.

Fuchshuber, Karlheinz Herbert; and Harkness, Eric Harold, to International Standard Electric Corporation. Wound suppresser capacitor with shock protection. 3,739,245, Cl. 317-256.000.

Fuji Photo Film Co., Ltd.: *See—*
Igarashi, Shunkichi; and Okano, Takeshi, 3,739,189.
Kamano, Hideo; Kato, Hirotetu; Kobayashi, Teruo; and Inoue, Kazuo, 3,738,846.
Yoshida, Makoto; Imai, Shinichi; and Tamano, Juniti, 3,738,839.

Fuji Shashin Film Kabushiki Kaisha: *See—*
Takahama, Sho; Okano, Takeshi; and Igarashi, Shunkichi, 3,738,486.

Fujimura, Kenichi; and Tanaka, Takashi, to Matsushita Electric Industrial Co. Ltd. Method of making a multi-channel magnetic head. 3,737,991, Cl. 29-603.000.

Fujio, Masaki. Method of dilating a flattened tube to a desired cross-section and delivering a pre-determined length of dilated tube. 3,738,210, Cl. 83-175.000.

Fujisawa, Kiyoji: *See—*
Hino, Tetsuo; Orita, Takao; Kozu, Isao; Fujisawa, Kiyoji; and Nishiyama, Akio, 3,738,021.

Fukuda, Takuji: *See—*
Ueda, Toshiyuki; and Fukuda, Takuji, 3,739,055.

Fukushima, Yoshio, to Kabushiki Kaisha. Illumination optical system for projecting multi-photographic image. 3,738,742, Cl. 353-38.000.

Furuhashi, Tokio, to Nippon Electric Company Limited. Amplifier circuit using complementary-symmetry transistors. 3,739,292, Cl. 330-17.000.

Furukawa, Ryujiro: *See—*
Kawaguchi, Hiroshi; and Furukawa, Ryujiro, 3,738,708.

Fussell, Don L.: *See—*
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Gabler, Rudolf: *See—*
Studinka, Josef; and Gabler, Rudolf, 3,738,966.

Gabrys, Kenneth F.: *See—*
Andersen, Kare; Gabrys, Kenneth F.; and Ingo, Tyrone B., 3,738,669.

Gach, Peter P., to Sunbeam Plastics Corporation. Child proof protective overcap for an aerosol can. 3,738,536, Cl. 222-153.000.

Gach, Peter P., to Sunbeam Plastics Corporation. Safety closure for aerosol can. 3,738,537, Cl. 222-153.000.

Gaertner, Helmut: *See—*
Keilmann, Philipp; and Gaertner, Helmut, 3,739,207.

GAF Corporation: *See—*
Bellisio, Arthur A.; Psyras, Hippocrates G.; and Fein, Marvin M., 3,738,086.

Gagyi, Oltan: *See—*
Smith, Douglas G.; Gagyi, Oltan; and Ross, Donald, 3,738,592.

Gaia, Aldino J.; and Urani, Angelo, to McGraw-Edison Company. Protectors for electric circuits. 3,739,313, Cl. 337-206.000.

Gallaoresi, Alfred P.; and Kurgan, Walter V., to Oberdorfer Foundries, Inc. Macerating pump with means for preventing blockages. 3,738,581, Cl. 241-46.020.

Galloway, Robert K., to Scranton, R. A., Industries, Inc. Apparatus for cutting and forming leads of electrical components. 3,738,398, Cl. 140-1.000.

Ganz, Walter C., to Chromatic Corporation, The. Perpetual calendar and writing instrument holder. 3,738,038, Cl. 40-111.000.

Ganzert, Albert E.: *See—*
Holmes, Marion B.; and Ganzert, Albert E., 3,738,150.

Garbark, Roman F., to Gottieb, D., & Company. Bobbin assembly for relay. 3,739,311, Cl. 335-276.000.

Gardner, Willis W., to Waukesha Bearings Corporation. Flexible pad journal bearing. 3,738,717, Cl. 308-122.000.

Gardner-Denver Company: *See—*
Ebstrom, Soren E. H., 3,738,780.

Garland, Carl C. Capsule finishing apparatus. 3,738,485, Cl. 209-74.000.

Garnett, Willard R., to Emerson Electric Co. Mechanical and electrical disconnect. 3,739,319, Cl. 339-66.00r.

Garrett, William R.: *See—*
Woodbridge, David D.; and Garrett, William R., 3,738,318.

Garver, Robert V., to United States of America, Army. Single diode single sideband modulator. 3,739,301, Cl. 332-16.00r.

Garza, Benito Gonzalez. Fish hook and live bait harness. 3,738,049, Cl. 43-44.400.

Gates, Walter C., Jr., to Texaco Inc. Hydrogenation of nitroparaffins. 3,739,027, Cl. 260-583.00m.

Gautney & Jones: *See—*
Gautney, George E.; Piombino, John; and Johnson, Rowland S., 3,739,278.

Gautney, George E.; Piombino, John; and Johnson, Rowland S., to Gautney & Jones. Receiver demuting arrangement employing sequential binary code. 3,739,278, Cl. 325-64.000.

Gazda, Edward S., to Dunham-Bush Inc. Compressor unloader indicator and refrigeration system controlled thereby. 3,738,116, Cl. 62-131.000.

Gebelein, Edward F., Jr.; and Dawes, Michael H., to Chandler Evans, Inc. Frequency multiplier. 3,739,156, Cl. 235-150.300.

Gebhart, Herbert J., Jr.: *See—*
Franz, Raymond A.; Montgomery, Phillip D.; and Gebhart, Herbert J., Jr., 3,739,038.

Gebr. Bohler & Co. Aktiengesellschaft: *See—*
Plockinger, Erwin; and Holzgruber, Wolfgang, 3,737,981.

Gebr. Saueressig KG: *See—*
Saueressig, Johann Heinrich, 3,738,265.

Gehringer, Lyle P. Paint pot holder. 3,738,601, Cl. 248-210.000.

Geiger, Rolf: *See—*
Jager, Georg; and Geiger, Rolf, 3,738,978.

Gell, Dennis; and Hvidsten, Jan Hogbart, to Stibbe-Monk Development Limited. Machine for the preparation of pattern carriers for circular knitting machines. 3,738,553, Cl. 225-97.000.

Gename, John L., to Omeco-St. John Co., mesne. Packing plant conveyor trolley. 3,738,477, Cl. 198-177.000.

General Electric Company: *See—*
Adams, Theodore P.; and Bowers, David L., 3,738,369.
Anderson, Robert M., 3,739,166.
Becker, Joseph J.; and Cech, Robert E., 3,738,876.
Billson, John A., 3,737,960.
Bunker, William Marvin; and Tew, Walter Hosey, Jr., 3,739,369.
Busby, Llewellyn D., 3,738,033.
Chandra, Subhash; and Lambert, Raymond H., 3,738,731.
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Crivello, James V., 3,738,967.
De Bleyker, James R.; and Hickox, William A., 3,739,221.
De Puy, Robert P., 3,739,274.
Holub, Fred F.; and Pauze, Denis R., 3,738,969.
Jones, Claude K.; and Martin, Stuart W., 3,739,220.
Jorgensen, Paul J., 3,737,977.
Loehle, Max Joseph, 3,738,720.
Martens, Stanton C., 3,738,866.
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Moran, Paul J., 3,739,350.
Morelock, Charles R., 3,738,314.
Noeske, Heinz O., 3,739,125.
Race, Martin L.; and Martiniak, Leonard J., 3,738,727.
Rosa, Hugh E., 3,738,104.
Rosenberry, George M., Jr., 3,739,249.
Ryckman, William D., Jr., 3,739,148.
Schneider, Harold N.; and Wittle, J. Kenneth, 3,739,073.
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Shartrand, Allan C., 3,739,208.
Tan, Richard M.; Johnson, Norman R.; and Backus, Lester F., 3,738,221.
Vicent, Charles S., Jr.; and VanPatten, John R., 3,739,181.
Webb, Jimmy L.; and Hall, Walter L., 3,739,035.
Williams, Earl C., 3,738,888.
Willyoung, David M., 3,739,213.
Ziemba, Richard T., 3,738,872.

General Electric Corporation: *See—*
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General Motors Corporation: *See—*
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Brumm, Karl; Moos, Jakob; Weber, Jorg; Drott, Helmut; and Stelzig, Russelsheim, 3,738,197.
Cwycyshyn, Walter; and Kitchen, Elwyn L., Jr., 3,738,481.
Drabik, Walter, 3,739,209.
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Kell, Nathaniel B., 3,738,198.
Maugans, Terrance W., 3,739,307.
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Scherer, Carl A.; and Lawson, Dale W., 3,738,119.
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Smith, Roy R., 3,738,126.
Stoltman, Donald D., 3,738,347.
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General Processing Corporation: *See—*
Hollis, Russell E., Jr., 3,738,613.

General Steel Industries, Inc.: *See—*
Burgess, Francis Travers, 3,738,283.

Gennow, Robert A., to Outboard Marine Corporation. Sod cutter cutoff blade mounting. 3,738,431, Cl. 172-20.000.

Genot, Jeanne, nee Delarbre; Le Grives, Emile; and Berland, Guy, to Office National d'Etudes et de Recherches Aerospatiales (par abreviation: O.N.E.R.A.). Rotor blades of rotary machines, provided with an internal cooling system. 3,738,771, Cl. 416-96.000.

Gentiluomo, Joseph A. Digital controlled golf ball teeing apparatus. 3,738,663, Cl. 253-201.000.

George, William L.: *See—*
Zoroglu, Demir S.; and George, William L., 3,737,985.

Gerbig, Hans Erwin: *See—*
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Gerbig, Hans-Erwin: *See—*
Von Starck, Axel; and Gerbig, Hans-Erwin, 3,738,777.

Gerke, Peter; Bock, Helmuth-Joachim; and Sennefelder, Anton, to Siemens Aktiengesellschaft. Cross field system with bistable polarized relays. 3,739,101, Cl. 179-180.00e.

Gerod, John T. Steam control method and apparatus for fabric pressing machine. 3,738,385, Cl. 137-606.000.

Geyer, Howard M., to Pneumo Dynamics Corporation. Device for controlled lowering of mass load. 3,738,459, Cl. 192-8.00r.

Ghersi, Jean-Claude: *See—*
Eyzat, Pierre; Ecomard, Andre; Stephant, Claude; and Ghersi, Jean-Claude, 3,738,332.

Ghirga, Marcello: *See—*
Di Fiore, Lucio; Divo, Claudio; and Ghirga, Marcello, 3,738,915.

Gier, Delta W.; and Wasleski, Daniel M., to Baychem Corporation, mesne. Process of killing undesired weeds. 3,738,823, Cl. 71-108.000.

Gill, Thomas R., to GS Equipment Company. Variable speed hydraulic drive system. 3,738,501, Cl. 212-125.000.

Gillet, Roger: *See—*
Koelbel, Robert; De Vaulx, Joseph; Gillet, Roger; and Lehuen, Christian, 3,739,212.

Gilliom, John W., to Tappan Company, The. Pyrolytic oven. 3,739,146, Cl. 219-393.000.

Gintz, Francis Paul, to BP Chemicals (U.K.) Limited. Vinyl ester/isobutene copolymer dispersion. 3,738,954, Cl. 260-29.60r.

Girault, Pierre: *See—*
Allais, Andre; and Girault, Pierre, 3,738,987.

Girling Limited: *See—*
Ingram, Brian; Harries, David Anthony; and Phoenix, Lancelot, 3,738,387.
Williams, Malcolm Clarence, 3,738,406.

Giuliani, Karl. Hinges and more particularly to hinges suitable for adjustable back rests of seating means. 3,737,946, Cl. 16-139.000.

Giunta, Joseph S.; Nicely, Thomas E.; and Patula, Edward J., to United States Steel Corporation. Strip load simulator for shape-measuring roll. 3,738,151, Cl. 73-1.00b.

Glancy, John J. Shoe heel with cushion wedge. 3,738,373, Cl. 128-585.000.

Glaser, Hans Joachim; and Beckmann, Horst, to Flachglas AG Delog-Detag. Sputter-coating apparatus with end feed. 3,738,928, Cl. 204-298.000.

Glatti, Flaviano; and Sanmartin, Pierantonio, to Montecatini Edison S.p.A. Polyvinyl chloride covering for a plant enclosure containing surface active agents to modify water-condensate droplet contact angle. 3,738,956, Cl. 260-41.00r.

Glatzel, Erhard; and Konschack, Erwin, to Carl-Zeiss-Stiftung, d/b/a Zeiss, Carl. High light intensity photographic lens of the extended Gauss type. 3,738,739, Cl. 350-214.000.

Gleim, Paul S.: *See—*
Bean, Kenneth E.; and Gleim, Paul S., 3,738,883.

Glesmann, Herbert C., to Bed-Well Corporation. Concrete finishing machines. 3,738,763, Cl. 404-119.000.

Globe-Union Inc.: *See—*
Bickler, Donald Bertram, 3,739,182.
Tigerman, Louis, 3,738,490.

Gloge, Detlef Christoph, to Bell Telephone Laboratories, Incorporated. Integrating electromagnetic beam position sensor. 3,739,174, Cl. 250-201.00r.

Gober, William C., Jr. Method and apparatus for formulating inks. 3,738,758, Cl. 356-189.000.

Godbey, John K.; Hawk, Daniel E.; and Slover, Vasel R., Jr., to Mobil Oil Corporation. Logging-while-drilling apparatus. 3,739,331, Cl. 340-18.0ld.

Gohde, Wolfgang: *See—*
Dittrich, Wolfgang; and Gohde, Wolfgang, 3,738,759.

Gokey, Phillip E.; and Rose, Frederick A., to Polar Ware Corporation. AC/DC supply circuit for an appliance. 3,739,186, Cl. 307-23.000.

Goldsworthy Engineering Inc.: *See—*
Goldsworthy, William B.; and Bunnell, John A., 3,738,637.

Goldsworthy, William B.; and Bunnell, John A., to Goldsworthy Engineering Inc. Method and apparatus for filament winding about three axes of a mandrel and products produced thereby. 3,738,637, Cl. 269-61.000.

Golembeck, Gerald A., to United States Bedding Company, The. Mattress assembly. 3,737,929, Cl. 5-345.000.

Goodale, Richard J. Apparatus for trimming the stems of cut flowers. 3,738,212, Cl. 83-602.000.

Goodale, Richard J. Apparatus for trimming the ends off vegetables. 3,738,258, Cl. 99-643.000.

Goodman, Johnny, 1/2 to Bristoni, Joseph J. Vehicle internal-combustion engine fuel control and signal device. 3,738,346, Cl. 123-198.0db.

Goodrich, B. F., Company, The: *See—*
Coffman, Alfred M., 3,738,971.

Goodyear Tire & Rubber Company, The: *See—*
Wilson, Farris H., Jr., 3,739,026.

Goto, Hiro: *See—*
Tomiyama, Shinichi; Susuki, Rinnosuke; Hoshi, Hiroshi; Saito, Jiro; Goto, Hiro; Umehara, Kenji; and Murakami, Keiichi, 3,739,060.

Goto, Kenji; Shibata, Norio; and Mizuno, Kiyohiko, to Toyota Jidosha Kogyo Kabushiki Kaisha. Safety device for an engine equipped with an exhaust gas purifier. 3,738,108, Cl. 60-277.000.

Gottieb, D., & Company: *See—*
Garbark, Roman F., 3,739,311.

Gottscho, Adolph, Inc.: *See—*
Navi, Menashe; and Levy, Murray N., 3,738,260.

Gottwald, Leo, K.G.: *See—*
Eiler, Peter, 3,738,442.

Gould Inc.: *See—*
Mayhew, William K.; and Disbrow, Wendell E., 3,739,147.

Gould, James J., to Duro Paper Bag Manufacturing Company. Handle means. 3,737,945, Cl. 16-125.000.

Gracey, Jerome B.: *See—*
Miller, Arthur J.; Perkins, Raymond; and Sullivan, Harold E., 3,737,941.

Gradnik, Boris; Pedrazzoli, Andrea; and Dall'Asta, Leone, to Societe d'Etudes de Recherches et d'Application Scientifiques et Medicales E.R.A.S.M.E. 2-Hydroxy-5-amino-benzamide derivatives. 3,739,030, Cl. 260-559.00s.

Graff, Kenneth W.; and Sherman, Albert H., to ICI America Inc. Textile treating compositions, process of treating textiles and textile articles. 3,738,981, Cl. 260-239.30r.

Gragert, Robert J. Combination holder for skis and ski poles. 3,737,956, Cl. 24-81.0sk.

Grahl, Darwin R.: *See—*
Eschbaugh, John T.; and Grahl, Darwin R., 3,738,573.

Grainger, Lewis M. D. Anti-pollution portable oil heater. 3,738,798, Cl. 432-222.000.

Granati, Salvatore. Adapter for fitting oversized spools of thread on a spool mount. 3,738,590, Cl. 242-130.000.

Granberg, Elof. Grinding apparatus and method. 3,738,200, Cl. 76-25.00a.

Grandrud, Ebenhard S. Rotary drive mechanism. 3,738,181, Cl. 74-13.000.

Granger, Edward H., to Phillips, F. C., Incorporated. Shoe outsole unit. 3,738,026, Cl. 36-59.00r.

Grant, Alan, & Partners: *See—*
Grant, Alan Barnett; and Sherman, Ralph, 3,738,112.

Grant, Alan Barnett; and Sherman, Ralph, to Grant, Alan, & Partners. Bridging or spanning of bodies of water. 3,738,112, Cl. 61-43.000.

Gravel, Charles: *See—*
Kurtz, Anthony D.; Mallon, Joseph; and Gravel, Charles, 3,739,315.

Gray, Richard W.; Rumball, Paul G.; and Brett, Oliver C., Jr., to USM Corporation. Top sheet separating, hold-back-down mechanism. 3,738,645, Cl. 271-97.000.

Gray, Robert M.: *See—*
Lieberman, Irving; and Gray, Robert M., 3,737,976.

Great Atlantic & Pacific Tea Company: *See—*
Hillhouse, Arthur S.; and Fanthorp, Alvin J., 3,739,339.

Great Atlantic & Pacific Tea Company, Inc.: *See—*
Copeland, John R.; and Reid, James F., 3,739,346.

Grebe, Ludwig, to Kramer & Grebe KG Maschinen-und Modellfabrik. Apparatus for guiding a foil web. 3,738,556, Cl. 226-173.000.

Green, Franklin C. Electro-mechanical free pistol. 3,738,043, Cl. 42-69.00a.

Green, Joseph, to Thiokol Chemical Corporation. High burning rate solid propellant having a silicon-carboranyl copolymer fuel binder. 3,738,878, Cl. 149-19.000.

Green, Max B.: *See—*
Bechtel, Bartow; and Green, Max B., 3,739,385.

Green, Talmage O., to Snap-On Tools Corporation. Pointers, dials, and method of calibrating dials for measuring instruments. 3,738,152, Cl. 73-1.00c.

Greenebaum, James E., II, to Seaquist Valve Company. Spra-mate overcap. 3,738,541, Cl. 222-402.100.

Gref, Hans: *See—*
Herzhoff, Peter; Gref, Hans; Schweicher, Wolfgang; Heidenreich, Max; and Frenken, Hans, 3,738,018.

Gregory, Edward G., to Rockwell Manufacturing Company. Hinge butt template assembly. 3,738,013, Cl. 33-197.000.

Grenier, Andre. Jacket and trousers combination. 3,737,916, Cl. 2-70.000.

Gribble, Maurice Woolmer, to Ferranti, Limited. Means for producing relative movement between two bodies. 3,738,764, Cl. 408-3.000.

Griffey, Donald E., to Motorola, Inc. Gaseous light firing circuit for television receivers. 3,739,094, Cl. 178-7.30r.

Griffin, William C.; Barker, Lynn; and Foote, Kenneth R., to United States of America, Navy. Pyrotechnic apparatus to assist in the tracking of aircraft. 3,738,277, Cl. 102-87.000.

Griffith Laboratories, Inc., The: *See—*
Neubeck, W. H., Jr.; and Kloska, Anthony J., 3,736,554.

Grimsrud, Lars: *See—*
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Griswold and Rauma, Architects, Inc.: *See—*
Rauma, John G., 3,738,724.

Grodinsky, Robert M. Controlled carrier amplitude modulated signal transmitting and receiving system. 3,739,280, Cl. 325-144.000.

Grollich, Ekkehard: *See—*
Rach, Heinz-Dieter; and Grollich, Ekkehard, 3,738,408.

Gronberg, Sven Jorgen Gerhard. Device in striking cutters. 3,738,584, Cl. 241-190.000.

Grosbard, Gregory, to Radion Development Corporation. Projectile. 3,738,272, Cl. 102-38.000.

Gross Cash Registers Limited: *See—*
Gross, Henry; and Gross, Samuel, 3,739,161.

Gross, Franz: *See—*
Veith, Werner; Gross, Franz; and Pobl, Konrad, 3,739,303.

Gross, Henry; and Gross, Samuel, to Gross Cash Registers Limited. Cash registers and other accounting machines keyboard-operated. 3,739,161, Cl. 235-156.000.

Gross, Samuel: *See—*
Gross, Henry; and Gross, Samuel, 3,739,161.

Grosseau, Albert, to S.A. Automobiles Citroen. Device for driving a passive element according to a predetermined law of movement. 3,738,110, Cl. 60-368.000.

Grossi, Giuseppe: *See—*
Camiciotioli, Roberto; and Grossi, Giuseppe, 3,739,098.

Grossman, Norman J.; Heid, Kermit K. W.; and Pittman, Richard D., to Northrop Corporation. Interconnected electrical circuit board assembly and method of fabrication. 3,739,232, Cl. 317-101.0cp.

Groundwater, Fergus M.: *See—*
Eyre, Frank W.; and Groundwater, Fergus M., 3,738,279.

Grube, Wolfgang Otto; Harris, Joel S.; and Escoli, Uri Z., to Eltra Corporation. Photo composing machines. 3,738,236, Cl. 95-4.500.

Gruenwald, Bjorn J., to Alpha Press Electronics, Inc. Reversible programmer for electric circuits. 3,739,113, Cl. 200-38.00r.

GS Equipment Company: *See—*
Gill, Thomas R., 3,738,501.

Guardian Packaging Corporation: *See—*
White, Jerome R., 3,739,130.

Gulf Oil Canada Limited: *See—*
Kaminsky, Victor Paul, 3,738,930.

Gulf Research & Development Company: *See—*
Clinton, Russell M.; and Puzniak, Thomas J., 3,738,810.
Cunningham, Glenn P.; and Larson, John G., 3,738,808.
Heavin, Leonard J., 3,738,976.
Lagally, Ralph W.; and Schulz, Johann G. D., 3,739,028.

Gumtow, Herbert A., to Briggs & Stratton Corporation. Safety device for small gasoline engines. 3,738,345, Cl. 123-169.00r.

Gundlach, Robert W., to Xerox Corporation. Induction imaging system. 3,738,855, Cl. 117-17.500.

Gunn, William J., to United States Steel Corporation. Method and apparatus for cold working seamless tubes. 3,738,146, Cl. 72-283.000.

Gunter, Colie Walton: *See—*
O'Neal, James Everett; Gunter, Josef Karl; and Gunter, Colie Walton, 3,737,952.

Gunter, Josef Karl: *See—*
O'Neal, James Everett; Gunter, Josef Karl; and Gunter, Colie Walton, 3,737,952.

Guntersdorfer, Max; and Heywang, Walter, to Siemens Aktiengesellschaft. Apparatus for atomizing fluids with a piezoelectrically stimulated oscillator system. 3,738,574, Cl. 239-102.000.

Guntersdorfer, Siegfried: *See—*
Heberle, Wolfgang; Guntersdorfer, Siegfried; and Klein, Peter, 3,739,090.

Gunther, Wolfgang H. H. Chalcogen organic compounds used in electrophotographic plates and processes. 3,738,831, Cl. 96-1.500.

Gusdorf & Sons, Inc.: *See—*
Gusdorf, Walter; and Camilleri, Charles F., 3,738,287.

Gusdorf, Walter; and Camilleri, Charles F., to Gusdorf & Sons, Inc. Hub and leg mounting for pedestal stands. 3,738,287, Cl. 108-150.000.

Gutshall, Charles E., to Elco Industries, Inc. Drilling and thread forming fastener. 3,738,218, Cl. 85-47.000.

Guyton, Hayward T.: *See—*
Hazelhurst, Gerald D.; Fussell, Don L.; and Guyton, Hayward T., 3,739,330.

Gwyn, Childress B., Jr., to Contacts Incorporated. Method for making cold bonded electrical composite contacts. 3,737,999, Cl. 29-630.000.

Haas, Gunter, to Kalle Aktiengesellschaft. Process and apparatus for increasing the charge density of insulators. 3,739,246, Cl. 317-262.00a.

Haaser, Walter L. Photographic developing tray. 3,738,251, Cl. 95-95.000.

Hackstein, Karl-Gerhard: *See—*
Rachor, Lothar; and Hackstein, Karl-Gerhard, 3,738,912.

Haegert, Clarence B. Battery terminal clamp. 3,739,322, Cl. 339-230.00r.

Hage, Joseph C., to Singer Company, The. Automatic adjuster for clutch and brake. 3,738,462, Cl. 192-18.00r.

Hagemann, Walter; and Zimmermann, Erwin, to Siemens & Hinsch mbH. Pump unit for conveying high temperature media. 3,738,781, Cl. 417-423.00r.

Hager, Klaus, to Bosch, Robert, Photokino G.m.b.H. Photographic apparatus with means for obstructing the passage of light through the viewfinder. 3,738,238, Cl. 95-11.00v.

Hakim, Louise Z. Blanket holder with stable and protected safety pin. 3,737,955, Cl. 24-72.500.

Hakki, Moustafa I.: *See—*
Costales, Manuel; and Hakki, Moustafa I., 3,738,094.

Hale, Elden A., Sr., to Koppers Company, Inc. Seal assembly for goggle valves. 3,738,610, Cl. 251-167.000.

Haley, Richard L. Spring hanger bracket and leaf spring intermediate support. 3,738,631, Cl. 267-52.000.

Hall, Bernard Arthur; and Hollins, Stanley Peter, to Lucas, Joseph, (Industries) Limited. Spark erosion machining. 3,739,138, Cl. 219-69.00d.

Hall, John F., to Chrysler Corporation. Five-way control valve and system. 3,738,384, Cl. 137-493.900.

Hall, Mitchell A., to Monarch Tool & Manufacturing Company. Lock box construction. 3,738,134, Cl. 70-86.000.

Hall, Walter L.: *See—*
Webb, Jimmy L.; and Hall, Walter L., 3,739,035.

Hall, William K., Jr. Air flow control system. 3,738,572, Cl. 236-49.000.

Hallett, Stanley Augustus. Splint. 3,738,358, Cl. 128-85.000.

Hallicrafters Co., The: *See—*
Schneider, Robert J.; and Levy, William I., 3,739,277.

Halliday, Michael: *See—*
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Halm, Roland L.: *See—*
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Halpern, William J.; and Damm, Carl A., to United States of America, Navy. Safety pin assembly. 3,738,222, Cl. 89-1.50d.

Hamamatsu TV Co., Ltd.: *See—*
Kurasawa, Kazuo, 3,739,091.

Hamamoto, Hiroshi: *See—*
Kimura, Takashi; Abe, Yoshihiko; and Hamamoto, Hiroshi, 3,738,830.

Hammes, Paul A.; Everson, Charles W.; and Danner, Wilson E., to Merck & Co., Inc. Process for preparing cured sausages. 3,738,842, Cl. 99-109.000.

Hanagarth, Wolfgang; and Schafer, Richard, to Klein, Schunzlin & Becker Aktiengesellschaft. Housing for centrifugal pumps. 3,738,769, Cl. 415-110.000.

Hanaoka, Masafumi: *See—*
Noda, Toshimasa; Hanaoka, Masafumi; and Kouno, Akiyoshi, 3,739,079.

Hancock, John, Furniture Manufacturing Co.: *See—*
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Hand, Albert E. Sled ski. 3,738,676, Cl. 280-22.000.

Handley, Norman C. Replaceable towel rod. 3,738,498, Cl. 211-105.100.

Hansen, Raymond J. Aircraft takeoff abort indicator. 3,738,165, Cl. 73-178.00t.

Hanson, Alden B.; and Hanson, Chris A., to Hanson Industries Inc. Ski boot having variable stiffness. 3,738,025, Cl. 36-2.5al.

Hanson, Chris A.: *See—*
Hanson, Alden B.; and Hanson, Chris A., 3,738,025.

Hanson Industries Inc.: *See—*
Hanson, Alden B.; and Hanson, Chris A., 3,738,025.

Hanton, Daniel, to Compagnie de Saint-Gobain. Process for expanding polystyrene. 3,738,020, Cl. 34-217.000.

Hanway, John E., Jr., to Chicago Bridge & Iron Company. Counterflow sludge burner. 3,738,289, Cl. 110-8.00r.

Hara, Hisashi, to Tokyo Shibaura Electric Co., Ltd. Semiconductor device with a field effect transistor. 3,739,238, Cl. 317-235.00r.

Harada, Koosuke; and Takeuchi, Shinjiro, to Mishima Kosan Co., Ltd. Fluid injection recording system utilizing alternating bias field. 3,739,396, Cl. 346-140.000.

Hardel, Hans-Joachim: *See—*
Sennewald, Kurt; Ohorodnik, Alexander; Mittler, Werner; Hundeck, Joachim; and Hardel, Hans-Joachim, 3,739,023.

Harding, Edward B.: *See—*
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Hardinge Brothers, Inc.: *See—*

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Hardwick-Etter Company: *See—*
Neitzel, Joseph C.; and Strandberg, Robert C., 3,739,266.
Hardy, John C., to Angelica Corporation. Patient garment with temperature control. 3,738,367, Cl. 128-379.000.
Hargett, Richard L.; and Humphrey, Samuel A., to United States of America, Navy. Homing depth bomb for searching for an underwater target. 3,738,270, Cl. 102-7.000.
Harkins, Bruce F. Monetary decodifying device. 3,739,068, Cl. 35-2.000.
Harkins, Samuel J., to Leeds & Northrup Company. Self-balancing recorder. 3,739,384, Cl. 346-139.00c.
Harkness, Eric Harold: *See—*
Fuchshuber, Karlheinz Herbert; and Harkness, Eric Harold, 3,739,245.
Haron, James D., to Inland Service Corporation. Dredging head with pivotally mounted mud shield. 3,738,029, Cl. 37-66.000.
Harper, Bruce Melvin. Universal mounting bracket. 3,738,600, Cl. 248-121.000.
Harries, David Anthony: *See—*
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Harris, Arthur Winslow; and Adkins, Robert Louis, to Chicago Bridge & Iron Company. Self-centering turntable for machining large circular objects. 3,738,205, Cl. 82-4.00r.
Harris, Elwyn Dean, to Commander Industries, Inc. Machine for loading strips into boxes. 3,738,505, Cl. 214-6.00d.
Harris, Ewell J. Combination fish lure and swivel. 3,738,045, Cl. 43-42.120.
Harris, George V., to Caterpillar Tractor Company. Backdraft rubber skin mold pattern. 3,738,418, Cl. 164-245.000.
Harris, Joel S.: *See—*
Grube, Wolfgang Otto; Harris, Joel S.; and Escoli, Uri Z., 3,738,236.
Harris, Wilbur E., to Uniroyal, Inc. Method of processing uncured rubber and like raw materials and article therefor. 3,738,580, Cl. 241-30.000.
Harrison, Hershel: *See—*
D'Agostino, Michael V., 3,739,200.
Harrison, Robert R., to Nemo Corporation. Pump for hydraulic steering unit. 3,738,228, Cl. 91-499.000.
Hartfelder, Gunter: *See—*
Wolf, Erhard; Kohl, Hans; and Hartfelder, Gunter, 3,738,982.
Hartman, Arlin P., to American Seating Company. Advancing and retracting mechanism. 3,738,612, Cl. 254-1.000.
Hartmann, George J.; and Nesslage, Donald J., to Phelps Dodge Copper Products Corporation. Molten metal level control for continuous casting. 3,738,419, Cl. 164-281.000.
Hartzell Industries, Inc.: *See—*
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Hartzell, James R., to Hartzell Industries, Inc. Sawmill apparatus having an improved log carriage feed control. 3,738,208, Cl. 83-76.000.
Hashiba, Hideyuki: *See—*
Takehisa, Masaaki; Senrui, Shiro; Kurihara, Hirondo; Maruyama, Yoshio; Watanabe, Hiromasa; Nakajima, Hayato; Touhei, Masamichi; Simada, Takeo; Suwa, Takesi; Takasaka, Yoshio; and Hashiba, Hideyuki, 3,738,974.
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Hashimoto, Osamu, to Nippon Gakki Seizo Kabushiki Kaisha. Ski core of plastic foam material. 3,738,675, Cl. 280-11.13l.
Hashimoto, Takeyuki: *See—*
Watanabe, Toshio; Hashimoto, Takeyuki; Yoshimatsu, Shigeki; Takeyama, Shigeyuki; Takashima, Kohki; and Izumi, Kiyoshi, 3,739,015.
Hasler, Alfred, to Ampex Corporation. Magnetic tachometer. 3,739,211, Cl. 310-168.000.
Hasselblad, Fritz Victor: *See—*
Olsson, Kurt Ove, 3,738,243.
Hassman, Jeffrey; and Luft, Walter, to Jacoby-Bender, Inc. Watch mounting device. 3,738,100, Cl. 58-88.0sc.
Hatano, Shogo: *See—*
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Haugwitz, Rudiger D.; and Narayanan, Venkatachala L., to Squibb, E. R., & Sons, Inc. Benzimidazolyl sulfides and sulfones. 3,738,993, Cl. 260-309.200.
Hauser, Heinz: *See—*
Auer, Werner; Buschmann, Karl; Hauser, Heinz; and Knobloch, Walter, 3,738,940.
Hausinger, Otto., to Porsche, Dr.-Ing. h.c.F., K.G., Firma. Lubricating arrangement for change-speed transmissions. 3,738,452, Cl. 184-6.120.
Haviland Agricultural Chemical Company: *See—*
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Haviland, James B., Jr.; and Balkema, Charles R., to Haviland Agricultural Chemical Company. Mobile thermoforming apparatus and method. 3,738,059, Cl. 47-26.000.
Hawk, Daniel E.: *See—*
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Hayashi, Masamichi, to Minolta Camera Kabushiki Kaisha. Continuous feed copying machine with an electronic flash illumination system. 3,738,747, Cl. 355-68.000.
Hayes, Harold B.; and Huff, Gerald L., to Lilly, Eli, and Company. Cephalosporin C solubilization process. 3,739,002, Cl. 260-243.00c.
Hayes, Roger. Control apparatus for blood pressure testing device. 3,738,357, Cl. 128-2.05g.
Hays, John D.; Schauerte, Johnny F.; and Baswell, Harlen L., to National Cash Register Company, The. Torsional stepping motor and exciter apparatus therefor. 3,739,252, Cl. 318-699.000.
Hazelhurst, Gerald D.; Fussell, Don L.; and Guyton, Hayward T., to Mark Products, Inc. Geophone assembly. 3,739,330, Cl. 340-17.000.
Heather, John T., to Ampex Corporation. Frame addressing scheme for video recording medium. 3,739,086, Cl. 178-66.00a.
Heavin, Leonard J., to Gulf Research & Development Company. Olefin catalyst slurry feeding process and apparatus. 3,738,976, Cl. 260-93.700.
Heberle, Wolfgang; Guntersdorfer, Siegfried; and Klein, Peter, to Siemens Aktiengesellschaft. Process and circuit arrangement for reproduction of a slowly transmitted picture in video telephony. 3,739,090, Cl. 178-6.800.
Heberlein & Co., AG: *See—*
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Hebert, Arthur J. Scale tester. 3,738,439, Cl. 177-50.000.
Heffelfinger, Robert E.: *See—*
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Hehl, Karl. Injection unit for an injection molding machine. 3,738,618, Cl. 259-191.000.
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Heim, Leonard A. Breading apparatus. 3,738,313, Cl. 118-16.000.
Hein, Allyn J.; Ruseff, Walter Z.; and Tribley, Gilbert, to Caterpillar Tractor Company. Variable displacement pump having pressure compensator control means. 3,738,779, Cl. 417-213.000.
Heinrich, Frank-Armin, to Bosch, Robert, Elektronik G.m.b.H. Facsimile system. 3,739,084, Cl. 178-6.000.
Heinz, Robert Alfred; Ochnle, Robert Charles; Watkins, Laurence Shrapnell; and Zavecz, Terrence Edward, to Western Electric Company, Incorporated. Intensity spatial filter having non-uniformly spaced filter elements. 3,738,752, Cl. 356-71.000.
Heinzer, Hans, to Schweizerische Industrie-Gesellschaft. Device for uniting parallel and oppositely disposed wall portions of a tube by transverse welding seams. 3,738,081, Cl. 53-180.000.
Hellebrandt, Dieter: *See—*
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Heller, Karl Heinz; and Fischer, Hans Joachim, to Continental Gummi-Werke Aktiengesellschaft. Fire extinguishing system. 3,738,429, Cl. 169-2.00r.
Helman, Robert W.: *See—*
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Helmerich & Payne, Inc.: *See—*
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Helms, Khirhes Robert, to Container Corporation of America. Finger hold detail for article group carriers and method and apparatus for forming same. 3,738,698, Cl. 294-87.200.
Hendrickson, Donald Carl: *See—*
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Hendrix Wire and Cable Corporation: *See—*
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Henoch, Bengt, to Institutet for Mikrovagsteknik. Cross-sectional area measuring device. 3,739,263, Cl. 324-58.50c.
Henrick, Clive A.; and Siddall, John B., to Zoecon Corporation. 11-Aza-10-keto aliphatic compounds. 3,739,018, Cl. 260-482.00r.
Henriot, Georges; and Engrenages et Reducteurs (Engrenages Citroen et Etablissements Robert Messian Reunis). Devices for rotating a body. 3,738,190, Cl. 74-411.000.
Henry, Colin Alexander: *See—*
Berwick, Charles; and Henry, Colin Alexander, 3,738,903.
Henry, Robert E., to United States of America, Atomic Energy Commission. Method of measuring entrained gas in a liquid using a converging-diverging nozzle. 3,738,154, Cl. 73-19.000.

Henschel, Edward: *See—*
Henschel, Joseph; and Henschel, Edward, 3,737,918.

Henschel, Joseph; and Henschel, Edward. Adjustable-size head covering. 3,737,918, Cl. 2-197.000.

Hepp, Gerard, to U.S. Philips Corporation. Circuit arrangement for suppressing interferences in an FM radio receiver. 3,739,285, Cl. 325-473.000.

Hermanson, Lloyd H., to Hancock, John, Furniture Manufacturing Co. Outdoor furniture construction. 3,737,926, Cl. 5-191.000.

Herret, Jean: *See—*
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Herring, Lloyd D., to Rowe International Inc. Centering mechanism for component sequencing machine. 3,738,473, Cl. 198-29.000.

Herring, William Peter: *See—*
Swordy, Robert; and Herring, William Peter, 3,738,268.

Herzhoff, Peter; Gref, Hans; Schweicher, Wolfgang; Heidenreich, Max; and Frenken, Hans, to Agfa-Gevaert Aktiengesellschaft. Drying arrangement on machines for coating supporting webs, more especially with photographic emulsions. 3,738,018, Cl. 34-155.000.

Hess, Heinz, to Fernseh G.m.b.H. System for the adjustment of the phase position of an alternating voltage. 3,739,103, Cl. 178-69.5cb.

Hess, Willy: *See—*
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Hessler, Alice: *See—*
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Hessler, Harold A.; and Hessler, Alice. Portable extensible fire escape slide. 3,738,450, Cl. 182-48.000.

Heuer, Arthur R., to Didier-Werke AG. Regenerative hot-blast stovs and their operation. 3,738,795, Cl. 432-28.000.

Hewlett-Packard Company: *See—*
Chaney, Robert L.; and Kelly, Michael A., 3,738,755.
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Heynisch, Hinrich, to Siemens Aktiengesellschaft. Amplifier with a velocity-modulated tube and a compensation circuit for the correction of phase distortions. 3,739,294, Cl. 330-44.000.

Heywang, Walter: *See—*
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Hickox, William A.: *See—*
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Hicks, Mervyn Lance, to Turn-Styles Limited, mesne. Animal milking apparatus. 3,738,321, Cl. 119-14.450.

Higuchi, Masaru, to West Electric Co., Ltd. Electronic flash device for photography. 3,738,239, Cl. 95-11.00r.

Hill, Lester M., to Beloit Corporation. Roll assembly for paper machine. 3,737,962, Cl. 29-123.000.

Hill, Max Lee, to Coleman Company Inc., The. Convertible bunk bed and lounge chair assembly. 3,738,705, Cl. 297-377.000.

Hill, William Frank, to Lucas, Joseph, (Industries) Limited. Fuel gauge operating circuits for road vehicles. 3,739,337, Cl. 340-59.000.

Hill-Rom Company, Inc.: *See—*
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Hillhouse, Arthur S.; and Fanthorp, Alvin J., to Great Atlantic & Pacific Tea Company. Warehouse indicator system. 3,739,339, Cl. 340-147.00a.

Hinkletter, Robert P. Safety closure cap. 3,738,523, Cl. 215-9.000.

Hino, Tetsuo; Orita, Takao; Kozu, Isao; Fujisawa, Kiyoji; and Nishiyama, Akio, to Matsushita Electric Industrial Co., Ltd. System for synchronizing sounds with learning materials. 3,738,021, Cl. 35-8.00a.

Hintzen, Peter; Jehle, Fritz; and Willenbacher, Erich, to Pfaff Industriemaschinen GmbH, Firma. Apparatus for producing apertures for jetted pockets on cut parts of garments. 3,738,292, Cl. 112-65.000.

Hirasawa, Kotaro; Kawatake, Koichi; Yuminaka, Takeo; and Iwasaka, Tatsuo, to Hitachi, Ltd. Measurement of mean waiting time. 3,739,163, Cl. 235-183.000.

Hirt Combustion Engineers: *See—*
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Hirt, John H., to Hirt Combustion Engineers. Apparatus for incineration of combustible material in a continuous flow of a gaseous medium. 3,738,816, Cl. 23-277.00c.

Hisserich, Charles A. Hunting-tooth timing belt. 3,738,187, Cl. 74-231.00c.

Hitachi, Ltd.: *See—*
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Hochstatter, Theo, to Sealy, Inc. Box spring press. 3,738,259, Cl. 100-295.000.

Hocking, Loren P. Pilot lamp electronic multi-switching circuitry. 3,739,334, Cl. 340-334.000.

Hoday, Steven F.; and Bolante, Jay J., to Appleton, Arthur I. Fish feeder. 3,738,328, Cl. 119-51.130.

Hodgin, Charles L. Automatic golf ball teeing device. 3,738,662, Cl. 273-201.000.

Hodgson, Roger R. Honeycomb uncapping machine. 3,737,931, Cl. 6-12.00a.

Hoelzen, Warren R., to United States of America, Navy. Safety-arming device. 3,738,273, Cl. 102-70.20r.

Hoffman, Clifford James. Adjustable height table. 3,738,286, Cl. 108-144.000.

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Hoffman, Lionel B.; and Sanders, Isaac W., to Pitney-Bowes, Inc., mesne. Flat bed electrostatic photocopier design for customer serviceability. 3,738,743, Cl. 355-3.000.

Hoffmann, Heinrich, to Daimler-Benz Aktiengesellschaft. Piston for internal combustion engines. 3,738,335, Cl. 123-41.350.

Hoffmann, Richard, to Bima Maschinenfabrik GmbH, Firma. Method of seamless connection of leather- and/or synthetic leather-parts, or the like, material and apparatus for performing the method. 3,738,887, Cl. 156-380.000.

Hoffmann-La Roche Inc.: *See—*
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Hofmann, Alfred: *See—*
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Hohlo, Janos; Toth, Jeno; and Zagyvai, Istvan, to Tatbanyai Szenbanyak. Process for the reduction of the biochemical oxygen demand of sewage, and for the recovery of the inherent protein. 3,738,933, Cl. 210-53.000.

Holbrook, LeGrand K., to Medical Development Corporation. Inverted fluid collection receptacle. 3,738,381, Cl. 137-199.000.

Holland, Harvison C.: *See—*
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Holland, Norman F., to Borg-Warner Corporation. Method and arrangement for controlling fuel delivery in a charge forming apparatus. 3,738,336, Cl. 123-73.00r.

Hollins, Stanley Peter: *See—*
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Hollis, Russell E., Jr., to General Processing Corporation. Jack construction for trailers and the like. 3,738,613, Cl. 254-86.00r.

Holloway, Joseph Marion. Velocipede equipped with dump body. 3,738,701, Cl. 298-19.00r.

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Holmes, Marion B.; and Ganzert, Albert E., to Daniels Manufacturing Corporation. Turret head assembly. 3,738,150, Cl. 72-410.000.

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Hondermark, Jean Claude, to British Petroleum Company Limited, The. Processes and apparatus for the recovery of micro-organisms cultivated on a hydrocarbon substrate. 3,738,488, Cl. 210-73.000.

Honeywell Inc.: *See—*
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Honjo, Kazuo, to Ideki Co., Ltd. Method for producing powder composed of precisely spherical particles. 3,739,049, Cl. 264-14.000.

Hoover, Michael C.; and Long, William C., to Mandrel Industries, Inc. Sorting machine. 3,738,484, Cl. 209-73.000.

Hopkins, Lionel G.: *See—*
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Horton, Travis, to Bess Manufacturing Company. Glove turning machine. 3,738,547, Cl. 223-40.000.

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Hoshi, Hiroshi: *See—*
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Hullett, David F.; Lytton, Kenneth G.; and Miller, George J., to Fiber Controls Corporation. Fiber feeding arrangement. 3,738,476, Cl. 198-58.000.
Hulyer, Michael George, to U.S. Philips Corporation. Cross addressed bistable display panel with selectable bilevel sustaining bias circuit. 3,739,371, Cl. 340-324.00r.
Humphrey, Andrew J.; and Szmanski, Dennis L., to Reliance Electric Company. Displaced waveform for a pulse width modulated power source. 3,739,253, Cl. 321-9.00a.
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Huntzinger, Gerald O.; Sheldrake, Leonard J.; and Johnson, Byron W., to General Motors Corporation. Electronic ignition spark advance system. 3,738,339, Cl. 123-117.00r.
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Huyck Corporation: *See—*
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Ingro, Ben. Safety fuel tanks. 3,738,428, Cl. 169-2.00a.
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Jackson, William E. Auxiliary retraction assembly for pneumatically suspended tandem-axle types. 3,738,679, Cl. 280-124.00r.
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Janson, Sven-Olaf. Electric sauna unit. 3,739,144, Cl. 219-362.000.
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Johansson, Torbjorn, to Allmanna Svenska Elektriska Aktiebolaget. Device for clamping a winding bar in tangential direction. 3,739,214, Cl. 310-214.000.
Johns, John M. Electric blanket having auxiliary heating element. 3,739,142, Cl. 219-212.000.
Johnsen, Vernon L.; Burnett, Raymond S.; and Matern Eugene V., to Wilson Pharmaceutical & Chemical Corporation. Method of preparing polypeptides. 3,738,913, Cl. 195-29.000.
Johnson & Johnson: *See—*
Lindquist, Julius A.; and Sommers, Jay R., 3,738,359.
Johnson, Arthur F. Reduction of aluminum with improved reduction cell and anodes. 3,738,918, Cl. 204-290.00r.
Johnson, Byron W.: *See—*
Huntzinger, Gerald O.; Sheldrake, Leonard J.; and Johnson, Byron W., 3,738,339.
Johnson, Charles W.: *See—*
Osmun, Dean W.; Johnson, Charles W.; and Plummer, Ray A., 3,738,424.
Johnson, George B.: *See—*
Ellinghause, Edgar A.; and Johnson, George B., 3,739,132.
Johnson, Nels A. Advancing fish lure. 3,738,046, Cl. 43-42.390.
Johnson, Norman R.: *See—*
Tan, Richard M.; Johnson, Norman R.; and Backus, Lester F., 3,738,221.
Johnson, Robert W.: *See—*
Raddi, William J.; Johnson, Robert W.; and Smithmyer, Joseph W., 3,738,371.
Johnson, Roger L.: *See—*
Bitzer, Donald L.; Bandy, Lyle E.; Johnson, Roger L.; and Skaperdas, Dominic O., 3,738,227.
Johnson, Rowland S.: *See—*
Gautney, George E.; Piombino, John; and Johnson, Rowland S., 3,739,278.
Johnson Service Company: *See—*
Froehling, Paul H., 3,739,188.
Johnson, Stanley Jerome, to Bell Telephone Laboratories, Incorporated. Phase difference detection circuit. 3,739,287, Cl. 328-133.000.
Johnson, Terence C.; and Reed, Malcolm E., to Seal, Inc., mesne. Method of bonding a laminating film to a graphic art object. 3,738,890, Cl. 156-286.000.
Johnston, Frederick B.: *See—*
Milner, Maclin R.; and Johnston, Frederick B., 3,738,819.
Jones, Claude K.; and Martin, Stuart W., to General Electric Company. Workpiece support for glow discharge apparatus. 3,739,220, Cl. 313-281.000.
Jones, Howard S., Jr., to United States of America, Army. Base mounted re-entry vehicle antenna. 3,739,386, Cl. 343-708.000.
Jones, Ivan R. Doorknob locking device. 3,738,137, Cl. 70-428.000.
Jones, John Leslie, Sr. Disposable toilet applicator. 3,737,939, Cl. 15-244.00a.
Jones, Paul D.: *See—*
Klarquist, John M.; Jones, Paul D.; and Reilly, Lawrence C., 3,738,862.
Jones, Robert E. Method for handling and stacking articles. 3,738,514, Cl. 214-152.000.
Jordan Research Corporation: *See—*
Pokrinchak, Jordan J.; and Corris, Charles J., 3,738,710.
Jorgensen, Paul J., to General Electric Company. Method of forming ceramic-metal seal. 3,737,977, Cl. 29-472.900.
Joug, Roland; and Ragout, Bernard, to Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes. Linear induction motor armatures. 3,739,203, Cl. 310-13.000.
Jullien, Jean, to Crouzet. Plant support with watering tube spiralling therearound. 3,738,060, Cl. 47-38.100.
Junge, Helmut: *See—*
Sturm, Hans Juergen; and Junge, Helmut, 3,739,009.
Jury & Spiers Proprietary Limited: *See—*
Jury, Harold Rex, 3,737,964.
Jury, Harold Rex, to Jury & Spiers Proprietary Limited. Expanded structural members. 3,737,964, Cl. 29-155.00r.
Kabushiki Kaisha: *See—*
Fukushima, Yoshio, 3,738,742.
Kabushiki Kaisha Daini Seikosha: *See—*
Tanaka, Jojiro, 3,738,099.
Kabushiki Kaisha Ichikin Kogyosha: *See—*
Inomata, Yoshio; and Kawaguchi, Yukiyoshi, 3,738,131.
Kabushiki Kaisha Komatsu Seisakusho Komatsu Limited: *See—*
Atsuta, Hisayoshi; and Koetsuka, Yokichi, 3,738,284.
Kabushiki Kaisha Meidensha: *See—*
Nishimura, Kazuo, 3,737,994.
Kabushiki Kaisha Tokai Rika Denki Seisokusha: *See—*
Shimizu, Tetsuji; Hotta, Yoichi; and Yoshida, Takomi, 3,739,185.
Kabushiki Kaisha Toyota Chuo Kenkijusho: *See—*
Kimura, Takashi; Abe, Yoshihiko; and Hamamoto, Hiroshi, 3,738,830.
Kabushikikaisha Tokyo Keiki (Tokyo Keiki Co., Ltd.): *See—*
Masuzawa, Isao, 3,739,251.

Kaczmarzyk, Leonard M.: *See—*
Brien, Huron C.; Morman, Raymond A.; and Kaczmarzyk, Leonard M., 3,738,364.

Kadlez, Karl; and Marek, Adolf, to Simmering-Graz-Pauker Aktiengesellschaft fur Maschinen-Kassel-und Waggonbau. Apparatus for welding tubes into tube plates. 3,739,133, Cl. 219-60.00a.

Kado, Taiichi, to Taiyo Iron Works Ltd. Cylinder covers for fluid pressure cylinders. 3,738,232; Cl. 92-161.000.

Kaesser, Glenda F.; and Zavertnik, Marshall G., to Killark Electric Manufacturing Company. Flame proof thermostat box. 3,739,128, Cl. 200-168.00g.

Kagami, Takayoshi, to Daiwa Can Co. Ltd. Container and a method for produking same. 3,738,528, Cl. 220-72.000.

Kagan, Avihu: *See—*
Willinger, Allan H.; Dinnerstein, Albert J.; and Kagan, Avihu, 3,738,494.

Kahan, Edward. Portable collector apparatus. 3,738,697, Cl. 294-19.00r.

Kaiser Aluminum & Chemical Corporation: *See—*
Barsotti, Leo R., 3,739,062.

Kakhniashvili, Avtandil Semenovich: *See—*
Alexandrov, Adolf Moritosovich; Suladze, Ippolit Davidovich; Dzhangirovich, Ruben; Aglitsky, Vladimir Efimovich; Kakhniashvili, Avtandil Semenovich; Kantor, Ilia Solomonovich; Dzhanelidze, Vazha Venediktovich; and Rozenfeld, Matvei Iosifovich, 3,738,393.

Kalb, Henry T.; Crosswy, Frank L.; and Harding, Edward B., to United States of America, Air Force. Doppler shift laser velocimeter data processor. 3,738,750, Cl. 356-28.000.

Kalita, Wesley, to Allegheny Ludlum Industries, Inc. Stainless steel of improved ductility. 3,738,875, Cl. 148-12.000.

Kalle Aktiengesellschaft: *See—*
Haas, Gunter, 3,739,246.

Kallenbach, Stanley E.: *See—*
Augarten, Sidney; Pande, Kailash C.; and Kallenbach, Stanley E., 3,738,973.

Kalopissis, Gregoire; and Bugaut, Andree, to L'Oreal. Dyeing human hair with 2-aminophenols. 3,738,799, Cl. 8-10.200.

Kamano, Hideo; Kato, Hirotetu; Kobayashi, Teruo; and Inoue, Kazuo, to Fuji Photo Film Co., Ltd. Fogged direct positive silver halide emulsion containing a sulfonated triphenylmethane dye. 3,738,846, Cl. 96-139.000.

Kaminsky, Victor Paul, 30% each to Canada-Cities Service, Ltd., Imperial Oil Limited, Atlantic Richfield Canada, Ltd. and 10% to Gulf Oil Canada Limited. Secondary froth wash. 3,738,930, Cl. 208-11.000.

Kanazawa, Yasunori; and Takeda, Yasutsugu, to Hitachi, Ltd. Device for reproducing information recorded in a hologram. 3,739,093, Cl. 178-7.200.

Kaneko, Thomas M., to BASF Wyandotte Corporation. Biodegradable detergent for automatic car wash systems. 3,738,943, Cl. 252-540.000.

Kantor, Ilia Solomonovich: *See—*
Alexandrov, Adolf Moritosovich; Suladze, Ippolit Davidovich; Dzhangirovich, Ruben; Aglitsky, Vladimir Efimovich; Kakhniashvili, Avtandil Semenovich; Kantor, Ilia Solomonovich; Dzhanelidze, Vazha Venediktovich; and Rozenfeld, Matvei Iosifovich, 3,738,393.

Kao Soap Co., Ltd.: *See—*
Doi, Tadashi; Ohtsuka, Shunzo; and Arai, Sumio, 3,738,852.

Kapp, Ernst: *See—*
Rudolph, Paul; and Kapp, Ernst, 3,738,103.

Karbo, Richard S., to Brunswick Corporation, mesne. Take-down archery bow. 3,738,348, Cl. 124-24.000.

Karcher, Ralph E., Jr.: *See—*
MaKenzie, Fred T.; Brophy, Robert V.; and Karcher, Ralph E., Jr., 3,738,296.

Karnes, Donovan; and Centliver, Marion F., to Hobart Brothers Company. Apparatus for moving wire. 3,738,555, Cl. 226-168.000.

Karuhn, Richard F.; Davies, Reg.; and Clinch, John Michael, to IIT Research Institute. Method and apparatus for detecting and sizing microscopic particles. 3,739,258, Cl. 324-71.0cp.

Karuhn, Richard F.; Davies, Reg; and Kaye, Brian Howard, to IIT Research Institute. Particle sensing apparatus, method and flow direction collar therefor. 3,739,268, Cl. 324-71.0cp.

Kasai, Akira: *See—*
Takeno, Syozo; Tashiro, Mitsuhiko; and Kasai, Akira, 3,738,865.

Kato, Hirotetu: *See—*
Kamano, Hideo; Kato, Hirotetu; Kobayashi, Teruo; and Inoue, Kazuo, 3,738,846.

Kato, Nori: *See—*
Yamaguchi, Isao; and Kato, Nori, 3,739,247.

Katsumata, Takuma; Uchiyama, Hideo; and Marita, Yoshiharu, to Mitsubishi Jukogyo Kabushiki Kaisha. Method and apparatus for inspecting a bottle. 3,739,184, Cl. 250-223.00b.

Katz, Isadore: *See—*
Kropfli, Robert A.; Katz, Isadore; Tritabaugh, Kenneth F.; and Beard, Richard M., 3,739,377.

Kauderer, Friedrich: *See—*
Deserno, Peter; Kauderer, Friedrich; and Prost, Hans, 3,739,281.

Kautsky, George J., to Textilana Corporation. Polyalkylene polyamino polykis methylene phosphonic acids and salts thereof and methods for producing same. 3,738,937, Cl. 252-180.000.

Kawaguchi, Hiroshi; and Furukawa, Ryujiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Brake pressure control valve. 3,738,708, Cl. 303-6.00c.

Kawaguchi, Yukiyoshi: *See—*
Inomata, Yoshio; and Kawaguchi, Yukiyoshi, 3,738,131.

Kawakami, Kenneth Nobuo, to Litton Systems, Inc. Broad band tunable solid state microwave oscillator. 3,739,298, Cl. 331-99.000.

Kawamoto, Masahiro: *See—*
Matsumoto, Shoichi; and Kawamoto, Masahiro, 3,738,942.

Kawatake, Koichi: *See—*
Hirasawa, Kotaro; Kawatake, Koichi; Yuminaka, Takeo; and Iwasaka, Tatsuo, 3,739,163.

Kaye, Brian Howard: *See—*
Karuhn, Richard F.; Davies, Reg; and Kaye, Brian Howard, 3,739,268.

Kear, Bernard H.; and Sink, Larry W., to United Aircraft Corporation. Method of making double-oriented single crystal castings. 3,738,416, Cl. 164-60.000.

Keen, Everett M.; and Siciliano, Anthony J., to Diamond International Corporation. Grill and guard arrangement for poultry feed troughs. 3,738,324, Cl. 119-18.000.

Keilmann, Philipp; and Gaertner, Helmut, to Brown Boveri & Company Limited. Weather-protected electric machine with axially circulating ventilation. 3,739,207, Cl. 310-59.000.

Keledy, Francis C., to Trodyne Corporation. Remote monitor and indicating system. 3,739,376, Cl. 340-416.000.

Kell, Nathaniel B., to General Motors Corporation. Shift inhibitors for power transmission. 3,738,198, Cl. 74-868.000.

Kelley, Leon O. Ripper plow assembly for converting parallel lift to radial lift. 3,738,432, Cl. 172-248.000.

Kelly, Gerald C. Wheel toy. 3,738,052, Cl. 46-51.000.

Kelly, Michael A.: *See—*
Chaney, Robert L.; and Kelly, Michael A., 3,738,755.

Kelsey-Hayes Company: *See—*
Miller, Roger L., 3,739,270.

Kemner, Mark H., to Allis-Chalmers Corporation. Swivel control handle for lift truck. 3,738,441, Cl. 180-19.00h.

Kendall Company, The: *See—*
Cheng, Shu-Sing, 3,738,811.

Kendy, Leonard, to Hughes Aircraft Company. Weapon firing computer. 3,739,153, Cl. 235-61.50r.

Kenkel, Robert W.: *See—*
Way, Robert W.; Clifford, Gilbert F.; Kenkel, Robert W.; Odell, Arthur W.; and Smith, Donald F., 3,738,487.

Kerfoot, William. Transparent liquid level indicator. 3,738,176, Cl. 73-425.40r.

Kerr, George, to U.S. Philips Corporation. Semiconductor device and method of manufacturing the device. 3,739,239, Cl. 317-235.00r.

Kerr Glass Manufacturing Corporation: *See—*
Roy, Gerald L., 3,738,545.

Kerr, Wayne L.; Duggan, Thomas W.; and Davis, Billy W., to Schlumberger Technology Corporation. Hydrophone assembly. 3,739,326, Cl. 340-7.00r.

Kerschbaum, Ewald: *See—*
Baden, Werner Fidi; and Kerschbaum, Ewald, 3,739,195.

Kessler, Gerald. Nailing clip for plastic siding. 3,738,076, Cl. 52-547.000.

Kessler, Sebastian William, Jr., to RCA Corporation. Transcalent semiconductor device. 3,739,235, Cl. 317-234.00r.

Ketechis, James C.: *See—*
Rogers, Roy C., Jr.; Howard, Lawrence W.; Ketechis, James C.; and Magnant, Kenneth K., 3,738,220.

Kewanee Oil Company: *See—*
Mudrak, Anton; and Zelek, John A., 3,738,800.

Kienzl, Arnold F.; and Thorp, Benjamin Adelbert, to Huyck Corporation. Papermaking machine dewatering devices having diverging trailing surfaces which include wear-bearing insert materials. 3,738,911, Cl. 162-374.000.

Kieserling, Th., & Albrecht Company: *See—*
Weck, Karl Gustav, 3,738,557.

Kilian, Rodolfo G. Particle separation system. 3,738,090, Cl. 55-349.000.

Killaly, John S., Sr. Punch press. 3,738,569, Cl. 234-43.000.

Killark Electric Manufacturing Company: *See—*
Kaesser, Glenda F.; and Zavertnik, Marshall G., 3,739,128.

Kimberly-Clark Corporation: *See—*
Brien, Huron C.; Morman, Raymond A.; and Kaczmarzyk, Leonard M., 3,738,364.

Kimberly-Clark Corporatisn: *See—*
Thomas, Gordon D., 3,738,905.

Kimoto, Ryuzo: *See—*
Suzuki, Eijiro; Kimoto, Ryuzo; Imaoka, Kazuo; and Umemoto, Kojiro, 3,739,010.

Kimura, Takashi; Abe, Yoshihiko; and Hamamoto, Hiroshi, to Kabushiki Kaisha Toyota Chuo Kenkijusho. Method for producing a metal die or mold. 3,738,830, Cl. 75-214.000.

King, Kenneth O., to Mead Corporation, The. Liquid drop printing or coating system. 3,739,395, Cl. 346-75.000.

King, Lewis C.; Yearsley, Gerald A.; Adams, Anthony L.; Simmons, Marion I.; Altenburger, Eugene G.; and Yager, Billy P., to Texas Instruments, Incorporated. Automated method and system for fabricating semiconductor devices. 3,737,983, Cl. 29-574.000.

King Nutronics Corporation: *See—*
Waldron, Bradley C., 3,738,174.

King, Roger A.; and Burton, Keith O., to Bur Kin Homes Corporation. Floor frame structure. 3,738,678, Cl. 280-106.00r.
Kinney, S. P., Engineers, Inc.: *See—*
Osborn, Fred; and Kinney, Selwyne P., 3,738,820.
Kinney, Selwyne P.: *See—*
Osborn, Fred; and Kinney, Selwyne P., 3,738,820.
Kiowski, John W., to Mandrel Industries, Inc. Digital sweep generator for generating analog signals. 3,739,374, Cl. 340-347.0da.
Kirchlechner, Hans: *See—*
Pollinger, Hans; Pohla, Alfred; and Kirchlechner, Hans, 3,738,680.
Kirkpatrick, James R. Portable work support assembly. 3,738,451, Cl. 182-155.000.
Kitani, Hideo: *See—*
Tatsumi, Toshio; Kitani, Hideo; and Maruoka, Hideo, 3,739,244.
Kitchen, Elwyn L., Jr.: *See—*
Cwycyshyn, Walter; and Kitchen, Elwyn L., Jr., 3,738,481.
Klarquist, John M.; Jones, Paul D.; and Reilly, Lawrence C., to Shell Oil Company. Process for preparing reinforced laminates in situ with epoxy-polyhydric phenol condensates. 3,738,862, Cl. 117-126.0ge.
Klein, Peter: *See—*
Heberle, Wolfgang; Guntersdorfer, Siegfried; and Klein, Peter, 3,739,090.
Klein, Schunzlin & Becker Aktiengesellschaft: *See—*
Hanagarth, Wolfgang; and Schafer, Richard, 3,738,769.
Kline, John C.; and Kronman, Albert F., to Eclipse Sleep Products, Inc. Trapezoidal stabilizers for inner spring units. 3,737,927, Cl. 5-260.000.
Kline, Larry Harold: *See—*
Baumrind, Stephen J., 3,737,921.
Klingenberg, Roger: *See—*
Steinberg, Max; Elian, Arthur; Verrone, Louis; and Klingenberg, Roger, 3,738,235.
Kloska, Anthony J.: *See—*
Neubeck, W. H., Jr.; and Kloska, Anthony J., 3,738,554.
Kluge, Reinhard: *See—*
Kluge, Willi; and Kluge, Reinhard, 3,738,644.
Kluge, Willi; and Kluge, Reinhard. Apparatus for separating a row of tierlike superposed flat articles, particularly newspapers. 3,738,644, Cl. 271-64.000.
Knapp, Edward Ronald, to Timken Company, The. Roller bearing rings. 3,737,965, Cl. 29-148.40r.
Knapp, Robert E. Salad serving combination including container for salad ingredients and cups for dressings or garnishes removably supported thereby. 3,738,525, Cl. 220-234.000.
Knapsack Aktiengesellschaft: *See—*
Sennewald, Kurt; Ohorodnik, Alexander; Mittler, Werner; Hundeck, Joachim; and Hardel, Hans-Joachim, 3,739,023.
Knauer, Kuno: *See—*
Butter, Karl; and Knauer, Kuno, 3,738,916.
Knebel, William J., to General Electric Corporation. Spool with means for start wire insulation. 3,739,312, Cl. 336-192.000.
Knickerbocker, Karl. Coin mechanism for vending machines. 3,738,466, Cl. 194-18.000.
Knobloch, Walter: *See—*
Auer, Werner; Buschmann, Karl; Hauser, Heinz; and Knobloch, Walter, 3,738,940.
Knorr-Bremse GmbH: *See—*
Pollinger, Hans; Pohla, Alfred; and Kirchlechner, Hans, 3,738,680.
Knudson, Kay L.: *See—*
Thorne, Gale H.; Wood, Orin Lew; and Knudson, Kay L., 3,738,914.
Knyazyatov, Andrei Serafimovich: *See—*
Nastjukha, Alexandr Ivanovich; Bespalov, Oleg Georgievich; Knyazyatov, Andrei Serafimovich; Smirnov, Pavel Alexandrovich; and Udovenko, Alexandr Nikolaevich, 3,739,227.
Ko, Wen H., to North American Manufacturing Company. Light sensitive control. 3,739,177, Cl. 250-206.000.
Kobayashi, Teruo: *See—*
Kamano, Hideo; Kato, Hirotetu; Kobayashi, Teruo; and Inoue, Kazuo, 3,738,846.
Koch, Claude V., to AMF Incorporated. Electrical timer switch assembly with improved switch operator means for automatic and manual tripping. 3,739,112, Cl. 200-38.00f.
Koebner, Adolph: *See—*
Bloch, Michael; and Koebner, Adolph, 3,738,996.
Koehring Company: *See—*
Wilke, Raud A., 3,738,379.
Koelbel, Robert; De Vaulx, Joseph; Gillet, Roger; and Lehuen, Christian, to Societe Generale de Constructions Electriques et Mecaniques (Alsthom). Device for the wedging of coils of rotors of electric machines. 3,739,212, Cl. 310-194.000.
Koetsuka, Yokichi: *See—*
Atsuta, Hisayoshi; and Koetsuka, Yokichi, 3,738,284.
Kogure, Motoo: *See—*
Ando, Yuzo; and Kogure, Motoo, 3,738,838.
Kohl, Hans: *See—*
Wolf, Erhard; Kohl, Hans; and Hartfelder, Gunter, 3,738,982.
Kojima, Isao; Takahashi, Tetsuya; Sasaki, Takeshi; and Yosimura, Tatuwo, to Hitachi, Ltd. Voltage multiplying rectifier device. 3,739,254, Cl. 321-15.000.
Koltz, John M.; and Scerbo, Frank J., to Bendix Corporation, The. Stored energy gyro. 3,738,179, Cl. 74-5.700.
Komaki, Takao: *See—*
Matsumoto, Seiji; Tamai, Yasuo; and Komaki, Takao, 3,738,832.
Koncz, Tihamer: *See—*
Koncz, Tihamer; and Zimmerli, Max (said Zimmerli assor. to said), 3,739,050.
Koncz, Tihamer; and Zimmerli, Max, said Zimmerli assor. to said Koncz, Tihamer. Process and apparatus for making large-area concrete panels. 3,739,050, Cl. 264-39.000.
Konishiroku Photo Industry Co., Ltd.: *See—*
Ando, Yuzo; and Kogure, Motoo, 3,738,838.
Kuwabara, Yoshimi; Matsuo, Shunji; Ishikawa, Hidehiko; and Sato, Mikio, 3,738,837.
Konschack, Erwin: *See—*
Glatzel, Erhard; and Konschack, Erwin, 3,738,739.
Kooiman, Pieter L., to Algemene Scandinavische Import Steel Maatschappij (A.S.I. Staal) N.V. Device of the self-leveling type for storing and dispensing a stack of articles. 3,738,722, Cl. 312-71.000.
Koppers Company, Inc.: *See—*
Hale, Elden A., Sr., 3,738,610.
Kopvillem, Olaf; and Mac Lean, James W., to Shell Oil Company. Articles produced by casting of sulfur asphalt. 3,738,853, Cl. 106-274.000.
Kortenhaus, Dieter, to NSM Apparatebau GmbH. Selective retrieval and memory system. 3,739,342, Cl. 340-162.000.
Kostenbader, Paul D., to Bethlehem Steel Corporation. Method for treating acid water containing metallic values. 3,738,932, Cl. 210-46.000.
Kostora, Lothar: *See—*
Biesinger, Erwin; Kostora, Lothar; and Sohnchen, Karl, 3,738,129.
Kotkins, Henry L., to Skyway Luggage Company. Method of manufacturing luggage cases and the like and products produced thereby. 3,737,980, Cl. 29-515.000.
Kouno, Akiyoshi: *See—*
Noda, Toshimasa; Hanaoka, Masafumi; and Kouno, Akiyoshi, 3,739,079.
Kozu, Isao: *See—*
Hino, Tetsuo; Orita, Takao; Kozu, Isao; Fujisawa, Kiyoji; and Nishiyama, Akio, 3,738,021.
Kraemer, George P., II. Anti-pollution recirculation tank for marine and similar use. 3,738,489, Cl. 210-94.000.
Kraft, Uno Ingemar, to Svenska Aktiebolaget Bromsregulator. Hydraulically operated cylinder-piston unit. 3,738,229, Cl. 92-17.000.
Kraftco Corporation: *See—*
Nezbed, Robert L.; and Zamzow, William H., 3,738,412.
Krambeck, Robert Harold, to Bell Telephone Laboratories, Incorporated. Buried channel charge coupled devices. 3,739,240, Cl. 317-235.00r.
Kramer & Grebe KG Maschinen-und Modellfabrik: *See—*
Grebe, Ludwig, 3,738,556.
Krapcho, John; and Bernstein, Jack, to Squibb, E. R., & Sons, Inc. 2,3,4,5-Tetrahydro-2-phenyl-1,4-benzothiazepine, hydrochloride. 3,738,999, Cl. 260-327.00b.
Kratochvil, Frank: *See—*
Zundel, Arthur P.; Patarini, Leon M.; Nickel, Warren A.; and Kratochvil, Frank, 3,738,526.
Krekow, Iniz I. Radiation sensitive traffic warning system. 3,739,179, Cl. 250-216.000.
Kretschmer, Horst: *See—*
Pusching, Klaus-Dieter; Patzwahl, Hans-Jurgen; and Kretschmer, Horst, 3,738,891.
Kronman, Albert F.: *See—*
Kline, John C.; and Kronman, Albert F., 3,737,927.
Kronseder, Hermann: *See—*
Pusching, Klaus-Dieter; Patzwahl, Hans-Jurgen; and Kretschmer, Horst, 3,738,891.
Kropfli, Robert A.; Katz, Isadore; Tritabaugh, Kenneth F.; and Beard, Richard M., to United States of America, Navy, mesne. Method and apparatus for target discrimination in a clutter environment. 3,739,377, Cl. 343-5.00r.
Kruse, Jurgen M.: *See—*
Elwell, Robert M.; Kruse, Jurgen M.; and Michelove, Leon, 3,738,858.
Kubatec Kunststoff- und Bautechnik AG: *See—*
Brandenberger, Ernst, 3,738,288.
Kubo, Moritada. Control system for the travel of a goods trolley. 3,738,443, Cl. 180-98.000.
Kubo, Naoshi: *See—*
Inoue, Giichi; Kubo, Naoshi; and Hatano, Shogo, 3,738,115.
Kubo, Seitoku; Hashimoto, Mashanao; Akashi, Teruo; and Hayashi, Chihiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Control system for an automatic transmission. 3,738,182, Cl. 74-866.000.
Kubo, Seitoku; Hashimoto, Mashanao; and Hayashi, Chihiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Control system for an automatic transmission. 3,738,196, Cl. 74-866.000.
Kubo, Seitoku; Mori, Takakazu; Akashi, Teruo; and Hayashi, Chihiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Shift control system for automatic transmission. 3,738,199, Cl. 74-869.000.
Kubo, Tomitaro: *See—*
Sugaike, Suezo; Watanabe, Masayuki; and Kubo, Tomitaro, 3,738,863.
Kufrin, Robert J.: *See—*
Horowitz, Samuel I.; and Kufrin, Robert J., 3,738,807.
Kuhlman, Lorraine O., to Laco Manufacturing Company. Flow nozzle and valve. 3,738,399, Cl. 141-21.00s.

Kuhn, Russell P. Tap wrench with swivel drive. 3,738,768, Cl. 408-240.000.

Kulczycki, Stanley N.: *See—*
Betts, Edward E.; and Kulczycki, Stanley N., 3,738,497.

Kulicke and Soffa Industries, Inc.: *See—*
Kulicke, Frederick W., Jr.; and LePone, John J., 3,738,560.

Kulicke, Frederick W., Jr.; and LePone, John J., to Kulicke and Soffa Industries, Inc. Semiconductor die bonder. 3,738,560, Cl. 228-10.000.

Kulite Semiconductor Products Inc.: *See—*
Kurtz, Anthony D.; Mallon, Joseph; and Gravel, Charles, 3,739,315.

Kumon, Osamu: *See—*
Osada, Mitsuo; Kumon, Osamu; and Nishimoto, Tatsuya, 3,738,936.

Kump, Wilhelm: *See—*
Bickel, Hans; and Kump, Wilhelm, 3,738,980.

Kundo (Kieninger & Obergfell): *See—*
Scheer, Erich, 3,738,098.

Kunimatu Sangyo Co., Ltd.: *See—*
Kunimatu, Takateru, 3,738,703.

Kunimatu, Takateru, to Kunimatu Sangyo Co., Ltd. Sunshade for foldable chair or bed. 3,738,703, Cl. 297-184.000.

Kunsi, Helmut; and Wasels, Heinrich, to Institute fur Harterei Technik and Wasels, Heinrich, Trade Representative. Brake or clutch lining. 3,738,463, Cl. 192-107.00m.

Kurasawa, Kazuo, to Hamamatsu TV Co., Ltd. Method and apparatus for displaying image and measuring object therein. 3,739,091, Cl. 178-68.000.

Kurgan, Walter V.: *See—*
Gallaoresi, Alfred P.; and Kurgan, Walter V., 3,738,581.

Kurihara, Hirondo: *See—*
Takehisa, Masaaki; Senrui, Shiro; Kurihara, Hirondo; Maruyama, Yoshio; Watanabe, Hiromasa; Nakajima, Hayato; Touhei, Masamichi; Simada, Takeo; Suwa, Takesi; Takasaka, Yoshio; and Hashiba, Hideyuki, 3,738,974.

Kurtz, Anthony D.; Mallon, Joseph; and Gravel, Charles, to Kulite Semiconductor Products Inc. Semiconductor transducers having H shaped cross-sectional configurations. 3,739,315, Cl. 338-3.000.

Kurze, Ulrich J.: *See—*
Ver, Istvan L.; and Kurze, Ulrich J., 3,738,448.

Kushner, Bernard N. Multi-window teaching device. 3,738,022, Cl. 35-9.00r.

Kuwabara, Yoshimi; Matsuo, Shunji; Ishikawa, Hidehiko; and Sato, Mikio, to Konishiroku Photo Industry Co., Ltd. Light-sensitive color photographic material. 3,738,837, Cl. 96-84.00r.

Kuwada, Edward A. Rule and compass device. 3,738,009, Cl. 33-27.00c.

Kyowa Hakko Kogyo Kabushiki Kaisha: *See—*
Uzu, Keizo; Nakano, Kinichi; and Takakashi, Toshinaka, 3,738,998.

La Costa, Nicholas J., to United States of America, Army, mesne. Grenade round with means giving forward momentum to the fired case. 3,738,271, Cl. 102-38.000.

Labbe, Francis Auguste Maurice; and Powell, Gordon Francis Wellington, to Molins Machine Company Limited. Manufacture of cigarettes and other tobacco-filled rod-like articles. 3,738,376, Cl. 131-21.00b.

Labin, Emile: *See—*
Perot, Gilbert; Labin, Emile; and Da Silveira, Miguel, 3,739,383.

Lace, Melvin A., to Motorola, Inc. Flowmeter for engine cooling system. 3,739,366, Cl. 340-239.00r.

Lacklison, David Edward, to U.S. Philips Corporation. Method of magnetic data storage. 3,739,360, Cl. 340-174.0vc.

Laco Manufacturing Company: *See—*
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Lacombat, Michel: *See—*
Marcy, Raymond; and Lacombat, Michel, 3,738,754.

Ladenberger, Volker: *See—*
Bronstertq Khius; Hofmann, Alfred; Fahrbach, Gerhard; and Ladenberger, Volker, 3,738,907.

Lagally, Ralph W.; and Schulz, Johann G. D., to Gulf Research & Development Company. Preparation of amines. 3,739,028, Cl. 260-585.00a.

Laigo, Ben M. Broiler. 3,738,255, Cl. 99-450.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Explotitation des Procedes Georges Claude: *See—*
Simonet, Guy; and Rico, Hubert, 3,738,084.

Laker, Abraham, to RCA Corporation. Method of making a semiconductor device. 3,738,880, Cl. 156-17.000.

Lambert, Raymond H.: *See—*
Chandra, Subhash; and Lambert, Raymond H., 3,738,731.

Lambert, Ronald D., to Fall, Herbert S. Anti-creep ball bearing retainer for a drawer slide. 3,738,716, Cl. 308-3.800.

Lanas, Frances J.: *See—*
Lunas, Francis J.; Burroughs, Edward E.; and Smith, Franklin G. (said Burroughs and Smith assors. to said), 3,738,363.

Lancy Laboratories, Inc., mesne: *See—*
Lancy, Leslie E., 3,738,868.

Lancy, Leslie E., to Lancy Laboratories, Inc., mesne. Waste treatment of aluminum containing solution. 3,738,868, Cl. 134-13.000.

Landsinger, Edmund E.; Nagus, Wilfred; Papavasiliou, Prodromos; and Stewart, George W., Jr., to Mattel, Inc. Globule display toy. 3,738,036, Cl. 40-106.210.

Landsman, Robert M., to Perkin-Elmer Corporation, The. Printing plate production method and apparatus. 3,739,088, Cl. 178-6.6tp.

Lane, Robert E.: *See—*
Terry, Ruel C.; and Lane, Robert E., 3,738,929.

Lange, Gerhard, to Siemens Aktiengesellschaft. Overvoltage arrester. 3,739,230, Cl. 317-62.000.

Langeckep, Erhard. Blow-moulding machines. 3,738,788, Cl. 425-326.000.

Langley London Limited: *See—*
Melluish, Anthony George, 3,738,591.

Langner, Gerhard, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Ball bearing. 3,738,719, Cl. 308-189.00a.

Lapointe, Lloyd J. Electrical switch. 3,739,310, Cl. 335-207.000.

Lapp, John; and Weiler, Norbert R., to McGraw-Edison Company. Method of making an impregnated plastic dielectric capacitor. 3,737,961, Cl. 29-25.420.

Larkin, Wallace K. Amphibious apparatus for conventional land aircraft. 3,738,598, Cl. 244-105.000.

Larson, John G.: *See—*
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Larson, Lawrence L.: *See—*
Ruger, William B.; and Larson, Lawrence L., 3,738,042.

Lassy, Carl O. Workpiece supporting clip on parallels and roller bearing type hold-down jaws. 3,738,638, Cl. 269-136.000.

Latall, Roy C., to Conco Inc. Apparatus for and method of locating leaks in a pipe. 3,739,089, Cl. 178-6.800.

Latash, Yury Vadimovich: *See—*
Medovar, Boris Izrailevich; Latash, Yury Vadimovich; Bondarenko, Oleg Petrovich; and Bogachenko, Alexsey Georgievich, 3,738,825.

Lau Incorporated: *See—*
Ranz, James R., 3,737,966.

Lauer, James L., to Sun Research and Development Co. Shock wave reactions. 3,739,063, Cl. 423-648.000.

Lawrence Brothers, Inc.: *See—*
Newlon, Robert L., 3,738,133.

Lawson, Alfred C., to Sybron Corporation. Automatic loading and unloading apparatus for washers, sterilizers and like vessels. 3,738,508, Cl. 214-23.000.

Lawson, Dale W.: *See—*
Scherer, Carl A.; and Lawson, Dale W., 3,738,119.

Layne, Ronald Paul. Photographic film processor. 3,738,250, Cl. 95-89.00r.

Lazar, Ferenc, to Tatabanyai Szenbanyak. Treatment of aluminate digester liquor. 3,738,411, Cl. 159-47.00r.

Lazar, Ralph M.: *See—*
Rockwood, Albert M.; Lemieux, Robert W.; Lutz, Allen; and Lazar, Ralph M., 3,738,656.

Le Grives, Emile: *See—*
Genot, Jeanne, nee Delarbre; Le Grives, Emile; and Berland, Guy, 3,738,771.

Le Roy, Guy, to Societe Lannionnaise d'Electronique and Compagnie Industrielle des Telecommunications. Variable capacity memory. 3,739,354, Cl. 340-173.00r.

Leach, Rex, Jr., to Horn, Paul, Farms, Inc. Batch weighing machine. 3,738,077, Cl. 53-59.00w.

Lear Siegler, Inc.: *See—*
Motz, Carl H.; Anthony, Russell W.; and Peterson, George C., 3,738,140.

Lecomte, Alexandre, to Regie Nationale des Usines Renault and Automobiles Peugeot. Methods of manufacturing steering wheels. 3,738,885, Cl. 156-172.000.

Lectron Industries, Inc.: *See—*
Branz, Weldon K.; Pennington, John C.; and Terpening, Leslie E., 3,738,660.

Lee, Barry T.; Wimmer, Gunther W.; and Hyatt, Gilbert P. Adaptive illumination source intensity control device. 3,738,242, Cl. 95-12.000.

Lee, Kirkwood M.; and Liddell, Arlyn G., to Eaton Corporation, mesne. Conveyor system. 3,738,475, Cl. 198-38.000.

Leeds & Northrup Company: *See—*
Harkins, Samuel J., 3,739,384.

Lefferdink, Theodore B.: *See—*
Anorga, Carlos J.; Chess, Samuel; and Lefferdink, Theodore B., 3,738,953.

Legler, Ernst, to Fernseh G.m.b.H. Television signal blanking. 3,739,092, Cl. 178-7.100.

Lehmann, Hans-Gunter; and Zollner, Georg, to Schering Aktiengesellschaft. 14,15-Beta-epoxycardenolides. 3,738,984, Cl. 260-239.570.

Lehuen, Christian: *See—*
Koelbel, Robert; De Vaulx, Joseph; Gillet, Roger; and Lehuen, Christian, 3,739,212.

Leiboff, Teague N.; and Powers, Joseph W., Jr., to Northrop Corporation. Digital system for band width reduction of video signals. 3,739,083, Cl. 178-6.000.

Leistner, Rudolf, to Braun Aktiengesellschaft. Camera with automatically operating exposure means. 3,738,244, Cl. 95-31.0fs.

Lemieux, Robert W.: *See—*
Rockwood, Albert M.; Lemieux, Robert W.; Lutz, Allen; and Lazar, Ralph M., 3,738,656.

Lemon, Lucien W.; and Palsson, Kristjan H., to Pacific Car and Foundry Company. Convertible railway hopper car. 3,738,511, Cl. 214-82.000.

Lenz, Conrad. False bottom for straining vats. 3,738,496, Cl. 210-488.000.
Leonard, Didier, to Compagnie Industrielle des Telecommunications CIT-Alcatel. Transmitter receiver for radio telephone network. 3,739,102, Cl. 179-41.00a.
LePone, John J.: *See—*
Kulicke, Frederick W., Jr.; and LePone, John J., 3,738,560.
Leppert, Dale V. High frequency ferroresonant transformer. 3,739,255, Cl. 321-16.000.
Les Fabriques d'Assortiments Reunies: *See—*
Simon-Vermot, Andre, 3,738,101.
Lessig, William R., III: *See—*
Dietzen, William H.; Lessig, William R., III; Alsruhe, Leonard U.; and Younginer, Howard I., 3,738,003.
Lester, Robert W., to Recognition Devices, Inc. Electronic system for locating. 3,739,329, Cl. 340-16.00r.
Lestrade, Marguerite Elise; and Herret, Jean, to Etat Francais. Anodic oxidation of aluminum and alloys thereof to form hard anodized coatings thereon. 3,738,921, Cl. 204-58.000.
Lever Brothers Company: *See—*
Priestley, Hill M.; and Wilson, James H., 3,739,031.
Levesque, Rodolphe J.: *See—*
Bachusky, Wayne J.; and Levesque, Rodolphe J., 3,738,278.
Levine, Samuel W.: *See—*
Frobosilo, Raymond C.; and Levine, Samuel W., 3,738,413.
Levy, Murray N.: *See—*
Navi, Menashe; and Levy, Murray N., 3,738,260.
Levy, William I.: *See—*
Schneider, Robert J.; and Levy, William I., 3,739,277.
Lewakowski, John Janusz. Engine exhaust recirculation. 3,738,342, Cl. 123-119.00a.
Lewis, James G.; and Hughes, Thomas A., to United States of America, Interior. Automatic stereoscopic profiling system. 3,738,746, Cl. 355-22.000.
Leybold-Heraeus Verwaltung GmbH: *See—*
Ermold, Edgar; Schwartz-Domke, Hans F. W.; Scheidig, Helmut; and Redel, Karl-Georg, 3,739,066.
Leyburn, Derek; Ahmad, Khurshid; and Thomas, Robert, to Bell Telephone Company of Canada, The. Telephone message accounting system. 3,739,097, Cl. 179-7.10r.
Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Bruch, Walter; and Scholz, Werner, 3,739,282.
Liddell, Arlyn G.: *See—*
Lee, Kirkwood M.; and Liddell, Arlyn G., 3,738,475.
Lieberman, Irving; and Gray, Robert M., to Whittaker Corporation. Method of forming filament reinforced metallic sheets. 3,737,976, Cl. 29-470.100.
Liebrand, Jerome T., to Pfizer Inc. Process for the manufacture of sugarless confections. 3,738,845, Cl. 99-134.00r.
Lief, Arthur: *See—*
D'Agostino, Michael V., 3,739,200.
Lilly, Eli, and Company: *See—*
Hayes, Harold B.; and Huff, Gerald L., 3,739,002.
Liming, Eugene H.; and Heffelfinger, Robert E. Timer control for trap release. 3,739,373, Cl. 340-309.10r.
Lincoln Brass Works, Inc.: *See—*
Blanzy, Eugene J.; and Duperow, Donald E., 3,738,577.
Lincoln Manufacturing Company, Inc.: *See—*
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Linder, Jerome; Maravetz, Lester L.; Schmit, George N.; and Newman, Neil F., to Esso Research and Engineering Company. Process for the preparation of cyclopropyhmethyl alkyl amines. 3,739,025, Cl. 260-563.00d.
Lindquist, Julius A.; and Sommers, Jay R., to Johnson & Johnson. Non-slip instrument pad. 3,738,359, Cl. 128-132.00d.
Lindros, Charles Jerome: *See—*
Moldovan, Michael Terrance, Jr.; Lindros, Charles Jerome; Wescott, Robert Dean; and Anderson, Lawrence Levi, 3,739,151.
Linsig, Andre, to UNELEC. Device for detecting the thermal overloads of a rotating member. 3,738,175, Cl. 73-362.0cp.
Lion Fat & Oil Co., Ltd.: *See—*
Tomiyama, Shinichi; Susuki, Rinnosuke; Hoshi, Hiroshi; Saito, Jiro; Goto, Hiro; Umehara, Kenji; and Murakami, Keiichi, 3,739,060.
Lippel, Bernard, to Nnited States of America, Army. Ordered dither system. 3,739,082, Cl. 178-6.000.
Lipscomb, Walter Peter; and Turner, Garland Linwood, to Allied Chemical Corporation. Foraminal apparatus for splaying and depositing nonwoven filamentary structures. 3,738,894, Cl. 156-441.000.
Litchfield, Mason Rawleigh; and Scott, Floyd Logan, Jr., to Smith International Inc., mesne. Mud saver valve and method. 3,738,436, Cl. 175-65.000.
Little, Carl H., to Weber-Knapp Company. Two lid counterbalance mechanism. 3,737,947, Cl. 16-190.000.
Litton Systems, Inc.: *See—*
Kawakami, Kenneth Nobuo, 3,739,298.
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Livingston, Clarence N., to Sunkist Growers, Inc. Bin for accumulating spherical articles. 3,738,507, Cl. 214-16.00r.
Livingston, William L., to Factory Mutual Research Corporation. System and method of fluid flow control utilizing a dynamic shutoff valve. 3,738,430, Cl. 169-13.000.
Lock, James A.: *See—*
Violette, Glenn M.; Paquin, Leon J.; and Lock, James A., 3,738,790.
Lodolini, Marcello; and Maggiull, Cataldo A., to Eastman Kodak Company. Process for preparing aminotriphenylmethane leuco bases. 3,739,000, Cl. 260-391.000.
Loehle, Max Joseph, to General Electric Company. Bearing locking means. 3,738,720, Cl. 308-236.000.
Lohest, Hans, to Barmag Barmer Machinenfabrik Aktiengesellschaft. Textile machines with uniform deceleration of its drive motors. 3,738,095, Cl. 57-100.000.
Lojinger, Robert I. Self-adjusting shirt collar support. 3,738,548, Cl. 223-83.000.
Long, Eric L.; and Cherry, Walter L., to Cherry Electrical Products Corporation. Keyboard pulse switch. 3,739,127, Cl. 200-160.000.
Long, William C.: *See—*
Hoover, Michael C.; and Long, William C., 3,738,484.
Long, William W., III, to Carborundum Company, The. Work handling apparatus. 3,738,521, Cl. 214-658.000.
Loos, Cornelis Henricus, to U.S. Philips Corporation. Device for controlling the air-fuel ratio in a combustion engine. 3,738,341, Cl. 123-119.00r.
Lopez, Oscar: *See—*
Lopez, Oscar; and Valdes, Juan C., 3,738,006.
Lopez, Oscar; and Valdes, Juan C., to Lopez, Oscar. Dental impression material injecting syringe. 3,738,006, Cl. 32-17.000.
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Kalopissis, Gregoire; and Bugaut, Andree, 3,738,799.
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Lorence, Ervin W., to Lorence Manufacturing Corporation. Speed reducing transmission. 3,738,194, Cl. 74-805.000.
Lorence Manufacturing Corporation: *See—*
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Loro, Alberto, to Microsystems International Limited. Semiconductor switching device. 3,739,236, Cl. 317-235.00r.
Los Angeles Miniature Products Inc.: *See—*
Carley, James A., 3,739,219.
Lotspeich, Joseph A., to Coin Acceptors, Inc. Coin pay-out means for coin changers. 3,738,377, Cl. 133-2.000.
Lott, Walter E., to Westinghouse Air Brake Company. Resiliently mounted elevator drive housing. 3,738,031, Cl. 37-8.000.
Loudas, Basil L.; and Vogel, Herward A., to Minnesota Mining & Manufacturing Company. Cyanurates of cyanatophenyl-terminated polyarylene ethers. 3,738,962, Cl. 260-47.00r.
Loughlin, James E.: *See—*
Snider, Orvill E.; Loughlin, James E.; and Ortheil, Hans, 3,738,804.
Loustalet, Pierre, to Etat Francais represente par le Ministre Charge de la Defense Nationale Delegation Ministerielle pour l'Armement. Apparatus for selective engagement and disengagement between a traction means and a mechanical unit. 3,738,693, Cl. 287-19.00r.
Lowe, Paul E.; and Pool, Byron K., to Natmar, Inc. Apparatus for bonding materials with heat settable adhesive. 3,738,898, Cl. 156-498.000.
Lowe, William H.: *See—*
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Rakich, Antone F.; Lozano, Luis J.; and Nehmes, John A., 3,737,979.
Lucas, Joseph, (Industries) Limited: *See—*
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Hall, Bernard Arthur; and Hollins, Stanley Peter, 3,739,138.
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Lucke, Charles H., Jr.; and Fee, Andrew R., to American Chain & Cable Company. Microficial hardness tester indenter. 3,738,161, Cl. 73-85.000.
Luckenbill, Lawrence F., to Mueller Co. Fire hydrant. 3,738,390, Cl. 137-797.000.
Ludlow, John L.: *See—*
Fryd, Michael; and Ludlow, John L., 3,739,043.
Ludwig, Reinhard, to Electroacustic Gesellschaft m.b.H. Method and device for evaluating echo signals with echo sounding systems having digital indication. 3,739,325, Cl. 340-3.00r.
Luft, Walter: *See—*
Hassman, Jeffrey; and Luft, Walter, 3,738,100.
Lunas, Francis J.; Burroughs, Edward E.; and Smith, Franklin G., said Burroughs and Smith assors. to said Lanas, Frances J. Breast pump. 3,738,363, Cl. 128-281.000.
Luse, Joe R. Pickup camper loading arrangement. 3,738,517, Cl. 214-515.000.
Lusk, Grady L. Transportable vehicle. 3,738,684, Cl. 280-491.00r.
Lussier, Ephrem A., to North American Rockwell Corporation. Weft storage device. 3,738,396, Cl. 139-122.000.
Luteran, Frank K., to Sparton Corporation. Interconnection matrix board. 3,739,231, Cl. 317-101.0ce.
Lutz, Allen: *See—*
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Lutz, Kenneth V. Asphalt mixer tip and shank assembly. 3,738,774, Cl. 416-210.000.
Lyon, Remy Blanc; Hess, Willy; and Ramier, Georges, to S.T.X., Graipement d'Interet Economique. Dyeing of textile fibers in a solvent medium. 3,738,803, Cl. 8-93.000.

Lyon, Richard H.; and Robertson, John A., to Mead Corporation, The. Apparatus and method for generation of drops using bending waves. 3,739,393, Cl. 346-1.000.
Lyons, Bob G.: *See—*
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Mabuchi, Kenichi, to Mabuchi Motor Co., Ltd. Model plane having radiating means. 3,738,058, Cl. 46-243.0av.
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Macchione, John M. Machine for assembling laminations. 3,737,971, Cl. 29-203.001.
MacKenzie, Elbert K., to Electro-Mechanical Instrument Co., Inc. Weatherproof electric almeter. 3,739,275, Cl. 324-156.000.
Mackenzie, Harold B. Method of and means for classification of heterogeneous shredded refuse materials. 3,738,483, Cl. 209-12.000.
Mackie, Arthur Patrick Pringle, to Mackie, James, & Sons Limited. Card clothing. 3,737,951, Cl. 19-97.000.
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Mackie, Arthur Patrick Pringle, 3,737,951.
Madary, James Victor; and Davis, William A., to Chicago Bridge & Iron Company. Off shore oil storage structure with submergence shell. 3,738,113, Cl. 61-46.500.
Madeira, John W., to Plasti-Kate Company. Paint touch-up container. 3,738,760, Cl. 401-4.000.
Mader, Fred. Process for producing a dried split pea or dried lentil product. 3,738,848, Cl. 99-204.000.
Madonia, Anthony F. Dough conditioning apparatus. 3,738,617, Cl. 259-185.000.
Mador, Irving L.: *See—*
McClain, Dorothee M.; and Mador, Irving L., 3,739,020.
Maeda, Haruo; and Miyazaki, Eiichi, to Matsushita Electric Industrial Co., Ltd. Electronic printing device. 3,738,266, Cl. 101-153.000.
Maedi, Ryozo: *See—*
Sawa, Yoshiro; Maedi, Ryozo; and Tada, Haruhiko, 3,738,989.
Maeshiba, Sozaburo. Flow meter for measuring small quantities of liquid fuel. 3,738,170, Cl. 73-217.000.
Maggiull, Cataldo A.: *See—*
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Majer, Mirko: *See—*
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Mallon, Joseph: *See—*
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Manfre, Ben Louis; and Forcella, Peter Werner, to FMC Corporation. Turret type coring unit. 3,738,257, Cl. 99-547.000.
Manly, Ron. Automatic editing method. 3,739,348, Cl. 340-172.500.
Mansell, Dennis N., to United States of America, Air Force. Laser beam scanning device. 3,738,168, Cl. 73-190.00r.
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Linder, Jerome; Maravetz, Lester L.; Schmit, George N.; and Newman, Neil F., 3,739,025.
Marble, Orlin G. Doll having gravity-actuated changeable eyes and denture arrays. 3,738,055, Cl. 46-135.00r.
Marcy, Raymond; and Lacombat, Michel, to Thomson-CSF. Optical contacting systems for positioning and metrology systems. 3,738,754, Cl. 356-106.000.
Marek, Adolf: *See—*
Kadlez, Karl; and Marek, Adolf, 3,739,133.
Maremont Corporation: *See—*
Brooks, Frank E.; and Waddington, James, 3,738,461.
Marendaz, Georges-Andre, to Ateliers des Charmilles S.A. Process and apparatus for machining by electro-erosion. 3,739,136, Cl. 219-69.00c.
Marendaz, Georges-Andre, to Ateliers des Charmilles S.A. Process and apparatus for machining by electro-erosion. 3,739,137, Cl. 219-69.00c.
Maretlli, Guido; Martelli, Nerio; and Martelli, Francesco. Apparatus for severing articles from a continuous thermoplastic web molded on rotary vacuum-forming machines. 3,738,787, Cl. 425-142.000.
Margittai, Thomas, 1/2 to Yuter, Seymour. Sequential drying system. 3,738,016, Cl. 34-92.000.
Marine, Jean: *See—*
Bujorklund, Gunnar; Borel, Joseph; and Marine, Jean, 3,739,353.
Marita, Yoshiharu: *See—*
Katsumata, Takuma; Uchiyama, Hideo; and Marita, Yoshiharu, 3,739,184.
Mark, John Thomas, to RCA Corporation. Single bore tube gas laser. 3,739,297, Cl. 331-94.500.
Mark Products, Inc.: *See—*
Hazelhurst, Gerald D.; Fussell, Don L.; and Guyton, Hayward T., 3,739,330.
Marquis, Edgar E.; and Niemand, Emil, to Robertshaw Controls Company. Control device and parts therefor or the like. 3,738,178, Cl. 74-3.500.
Marquis, Edward Thomas: *See—*
Peppel, William Jennings; Schulze, Heinz; and Marquis, Edward Thomas, 3,739,021.
Marsden, Geoffrey, to Barker, R. E., & Co., Limited. Material handling equipment. 3,738,512, Cl. 214-730.000.
Marshall, Frank Graham; and Paige, Edward George Sydney, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defense in Her Britannic Majesty's Government of the. Acoustic surface wave devices. 3,739,290, Cl. 330-5.500.
Marshall, James E.: *See—*
Stern, Howard R.; Marshall, James E.; and Sloane, Thomas E., Jr., 3,738,195.
Martelli, Francesco: *See—*
Maretlli, Guido; Martelli, Nerio; and Martelli, Francesco, 3,738,787.
Martelli, Nerio: *See—*
Maretlli, Guido; Martelli, Nerio; and Martelli, Francesco, 3,738,787.
Martens, Stanton C., to General Electric Company. Flame resistant polyolefin composition and article formed thereof. 3,738,866, Cl. 117-232.000.
Martin, Elmore Louis, to Du Pont de Nemours, E. I., and Company. Fluoro- and cyano-substituted 1,4-phenylene-bis (hydrocarbylmalononitriles) and process of preparation. 3,739,008, Cl. 260-465.00g.
Martin, Sterling T.: *See—*
Berry, James M.; Byrd, Wallace E.; Dillon, Ronald D.; Dunn, Carroll E.; and Martin, Sterling T., 3,738,812.
Martin, Stuart W.: *See—*
Jones, Claude K.; and Martin, Stuart W., 3,739,220.
Martinez, Renato G. Advance call system for vehicular traffic control. 3,739,332, Cl. 340-37.00a.
Martiniak, Leonard J.: *See—*
Race, Martin L.; and Martiniak, Leonard J., 3,738,727.
Maruoka, Hideo: *See—*
Tatsumi, Toshio; Kitani, Hideo; and Maruoka, Hideo, 3,739,244.
Maruyama, Yoshio: *See—*
Takehisa, Masaaki; Senrui, Shiro; Kurihara, Hirondo; Maruyama, Yoshio; Watanabe, Hiromasa; Nakajima, Hayato; Touhei, Masamichi; Simada, Takeo; Suwa, Takesi; Takasaka, Yoshio; and Hashiba, Hideyuki, 3,738,974.
Marzolph, Herbert: *See—*
Wieden, Horst; Nogai, Alfred; and Marzolph, Herbert, 3,739,054.
Maschek, Adrian M.; and Pace, Henry. Combined toilet tissue storage and dispensing device. 3,738,721, Cl. 312-39.000.
Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Zurner, Hans-Jurgen, 3,738,231.
Maschinenfabrik Oerlikon: *See—*
Schaetti, Norbert, 3,737,989.
Maschinenfabrik Reinhausen Gebruder, Scheubeck K.G.: *See—*
Matzl, Manfred, 3,739,256.
Wittenzellner, Georg; and Stark, Hans, 3,739,111.
Masi, Frank, to United States Radium Corporation. X-ray conversion screen utilizing yttrium oxysulfide phosphor. 3,738,856, Cl. 117-33.50c.
Maskal, John; Thompson, Ivam M.; and Heikel, Henrik, to Dow Chemical Company, The. Magnesium hydroxide-containing paper. 3,738,909, Cl. 162-181.00a.
Masoian, Leon M.: *See—*
Poppe, Martin C., Jr.; and Masoian, Leon M., 3,739,390.
Mason, David M.: *See—*
Reid, Jack M.; Weil, Sanford A.; Mason, David M.; and Staats, William R., 3,738,793.
Mason, H. C., & Associates, Inc.: *See—*
Mason, Howard C., 3,738,510.
Mason, Howard C., to Mason, H. C., & Associates, Inc. Sticker placer apparatus for placing sticks. 3,738,510, Cl. 214-6.0dk.
Massa Division Dynamics Corporation: *See—*

Massa, Donald P., 3,739,327.

Massa, Donald P., to Massa Division Dynamics Corporation. Electroacoustic transducers of the mass loaded vibratile piston type. 3,739,327, Cl. 340-10.000.

Massey-Ferguson, Inc.: *See—*
Noller, Fred W., 3,738,502.

Massie, Philip E. Electrically operated hydraulic valve particularly adapted for pollution-free electronically controlled internal combustion engine. 3,738,337, Cl. 123-90.120.

Masuzawa, Isao, to Kabushikikaisha Tokyo Keiki (Tokyo Keiki Co., Ltd.). Marine autopilot system. 3,739,251, Cl. 318-611.000.

Mater, Milton H. Sealing structure for pole boring machine. 3,738,765, Cl. 408-37.000.

Matern Eugene V.: *See—*
Johnsen, Vernon L.; Burnett, Raymond S.; and Matern Eugene V., 3,738,913.

Matsuda, Mutsuhide: *See—*
Uchiyama, Takashi; Ito, Tadashi; Matsuda, Mutsuhide; and Ogiso, Mitsutoshi, 3,738,237.

Matsuda, Shinzaburo. Footwear having an active ornament. 3,738,024, Cl. 36-2.50r.

Matsumoto, Seiji; Tamai, Yasuo; and Komaki, Takao, to Xerox Corporation. Color electrophotographic process employing liquid developer containing gelatin. 3,738,832, Cl. 96-1.200.

Matsumoto, Shoichi; and Kawamoto, Masahiro, to Tskyo Shibaura Electric Co., Ltd. Liquid crystal material. 3,738,942, Cl. 252-408.000.

Matsuo, Shunji: *See—*
Kuwabara, Yoshimi; Matsuo, Shunji; Ishikawa, Hidehiko; and Sato, Mikio, 3,738,837.

Matsushima, Hiromichi; and Ito, Tomoyuki. Clutch disk and method of making. 3,738,901, Cl. 161-42.000.

Matsushita Electric Industrial Co. Ltd.: *See—*
Fujimura, Kenichi; and Tanaka, Takashi, 3,737,991.
Hino, Tetsuo; Orita, Takao; Kozu, Isao; Fujisawa, Kiyoji; and Nishiyama, Akio, 3,738,021.
Maeda, Haruo; and Miyazaki, Eiichi, 3,738,266.
Tatsumi, Toshio; Kitani, Hideo; and Maruoka, Hideo, 3,739,244.
Yanagiuchi, Yukihiro, 3,737,993.

Mattel, Inc.: *See—*
Landsinger, Edmund E.; Nagus, Wilfred; Papavasiliou, Prodromos; and Stewart, George W., Jr., 3,738,036.
Stern, Howard R.; Marshall, James E.; and Sloane, Thomas E., Jr., 3,738,195.

Matthey, Maurice; and Imgrund, Heinrich, to Manutar S.A. Device for controlling the stroke and the travelling speed of at least one of the moving parts of a machine-tool. 3,738,184, Cl. 74-110.000.

Matysek, John J. Traffic pattern simulator. 3,739,335, Cl. 340-40.000.

Matzke, William A., to Champion International Corporation. Textured film finished panels and doors. 3,738,900, Cl. 161-41.000.

Matzl, Manfred, to Maschinenfabrik Reinhausen Gebruder, Scheubeck K.G. Transfer switching system for regulating transformers including thyristor network and logic controls therefor. 3,739,256, Cl. 323-43.0ss.

Maugans, Terrance W., to General Motors Corporation. Dual turret mechanism for generating a tuning voltage for a voltage tuned AM-FM radio receiver. 3,739,307, Cl. 334-2.000.

Mavroides, William G.; and Mailloux, Robert J., to United States of America, Air Force. Metallized channel guide antenna. 3,739,391, Cl. 343-785.000.

Maxfield, E. Blair: *See—*
Cooper, Laurence C.; and Maxfield, E. Blair, 3,738,349.

May, William E., to I-T-E Imperial Corporation. Pole synchronization test apparatus for multi-pole circuit breakers. 3,739,259, Cl. 324-28.0cb.

Mayerhofer, Franz, to Optische Werke G. Rodenstock. Weight-balancing arrangement at vertically displaceable instrument tables for ophthalonological apparatus or the like. 3,738,632, Cl. 267-135.000.

Mayhew, William K.; and Disbrow, Wendell E., to Gould Inc. Extruded contact electric heater strip. 3,739,147, Cl. 219-535.000.

Maytag Company, The: *See—*
Smith, Thomas R., 3,738,130.

Mazac, Frank P.: *See—*
Fitzsimons, Alan R.; and Mazac, Frank P., 3,739,099.

Mazzi, Aramis, to Solis S.r.l. Pneumatic knit fabric tensioning devices for use with circular knitting machines. 3,738,123, Cl. 66-149.00s.

Mc Casland, Thomas A.: *See—*
Parker, Joe B.; and Mc Casland, Thomas A., 3,738,388.

Mc Kean, Alexander L., to Phelps Dodge Cooper Products Corporation. Filter circuit for corona detection. 3,739,272, Cl. 324-54.000.

McAdam, William E., Jr.: *See—*
Frohock, Millard M., Jr.; and McAdam, William E., Jr., 3,739,152.

McBee, Robert D. Removable side car bumper. 3,738,695, Cl. 293-1.000.

McClain, Dorothee M.; and Mador, Irving L., to National Distillers and Chemical Corporation. Preparation of carboxylic acids. 3,739,020, Cl. 260-531.00r.

McClain, James E.; and Darnell, Byron G., to Esco Manufacturing Company. Switching apparatus. 3,739,115, Cl. 200-48.00r.

McClure, James D., to Shell Oil Company. Preparation of aromatic polyisocyanates by catalytic carbonylation of nitro compounds. 3,739,005, Cl. 260-453.0pc.

McCombs, Norman R., to Union Carbide Corporation. Selective adsorption gas separation process. 3,738,087, Cl. 55-78.000.

McDonnell Douglas Corporation: *See—*
Betts, Edward E.; and Kulczycki, Stanley N., 3,738,497.
Donovan, Bradford P.; and Wood, Lorin A., 3,738,594.

McEntire, Robert H., to Atlantic Richfield Company. Anchor tester. 3,738,163, Cl. 73-95.000.

McFarlan, A. I., Company, Inc.: *See—*
McFarlan, Edward Russell, 3,738,899.

McFarlan, Edward Russell, to McFarlan, A. I., Company, Inc. Airconditioning system and method. 3,738,899, Cl. 165-2.000.

McGraw-Edison Company: *See—*
Forg, John H.; and Payet, George L., 3,738,019.
Gaia, Aldino J.; and Urani, Angelo, 3,739,313.
Lapp, John; and Weiler, Norbert R., 3,737,961.
Moran, Richard J., 3,739,229.
Starr, Robert V., 3,739,120.

McIlvaine, Robert L., to Environeering, Inc. Gas scrubber. 3,738,624, Cl. 261-44.00r.

McKearney, James L.: *See—*
Fine, Hyman M.; and McKearney, James L., 3,738,530.

McKinnon, Charles N., Jr. Arrangement for explosively formed connections and method of making such connections. 3,737,975, Cl. 29-421.000.

McLauchlan, John, to Houdaille Industries, Inc. Buckling column bumper system with vertical displacement-preventing means. 3,738,696, Cl. 293-70.000.

McManus, James W., to Trak Microwave Corporation. Miniaturized ferrimagnetic circulator for microwaves. 3,739,302, Cl. 333-1.100.

McNamee, Charles R.: *See—*
Jeliner, Jerry G.; and McNamee, Charles R., 3,738,670.

McShirley, Robert C. Apparatus for dispensing a measured volume of a dental resin reagent. 3,738,177, Cl. 73-429.000.

Mead Corporation, The: *See—*
King, Kenneth O., 3,739,395.
Lyon, Richard H.; and Robertson, John A., 3,739,393.

Medical Development Corporation: *See—*
Holbrook, LeGrand K., 3,738,381.

Medovar, Boris Izrailevich; Latash, Yury Vadimovich; Bondarenko, Oleg Petrovich; and Bogachenko, Alexsey Georgievich. System and method of electroslag remelting utilizing slab-shaped electrodes. 3,738,825, Cl. 75-10.00c.

Melconian, Jerry O.: *See—*
Stein, Wolfgant J.; and Melconian, Jerry O., 3,738,106.

Mellgren, Gunnar: *See—*
Bylund, Per Ake; and Mellgren, Gunnar, 3,739,234.

Melluish, Anthony George, to Langley London Limited. Textile bowl and the like. 3,738,591, Cl. 242-18.0dd.

Meloling, Harold E.: *See—*
Winter, Paul H.; Davis, William F.; and Meloling, Harold E., 3,739,318.

Melton, Robert A. Magnetic switch for game boards with movable magnet contact. 3,739,117, Cl. 200-611.000.

Mench, John W.: *See—*
Cimino, Dennis J.; Mench, John W.; and Pancoast, Leonidas H., Jr., 3,738,970.

Merck & Co., Inc.: *See—*
Fisher, Michael H., 3,738,994.
Hammes, Paul A.; Everson, Charles W.; and Danner, Wilson E., 3,738,842.

Meredith, Gary L., to Tamar Electronics Inc. Vehicle lane occupancy computer for traffic controller. 3,739,333, Cl. 340-31.00a.

Merlin Gerin, Societe Anonyme: *See—*
Payen, Jean-Pol, 3,739,108.

Merrill, Stewart H.; and Contois, Lawrence E., to Eastman Kodak Company. Photoconductive elements containing halogenated poly-α-olefin binders. 3,738,833, Cl. 96-1.600.

Messerschmitt-Bolkow-Blohm, GmbH: *See—*
Butter, Karl; and Knauer, Kuno, 3,738,916.

Metaframe Corporation: *See—*
Willinger, Allan H.; Dinnerstein, Albert J.; and Kagan, Avihu, 3,738,494.

Metafrome Corporation: *See—*
Dinnerstein, Albert J., 3,738,319.
Stasio, Robert, 3,738,316.

Metallgesellschaft Aktiengesellschaft: *See—*
Rudolph, Paul; and Kapp, Ernst, 3,738,103.

Metcalf, Joseph R.: *See—*
Fryrear, William A., Jr.; and Metcalf, Joseph R., 3,738,427.

Metcalfe, Kenneth A.; and Lowe, William H., to Commonwealth of Australia, The; care of the Secretary, Department of Supply. Multipoint distributor head for signal recording or the like. 3,739,087, Cl. 178-6.60a.

Mettier, Bruno; and Majer, Mirko, to Schweizerisches Serum-und Impfinstitut und Institut Zur Erforschung der Infektions-Krankheiten. Anhydrous, stable smallpox vaccine composition for percutaneous application and method of preparing the same. 3,739,065, Cl 424-78.000.

Metzger, Marshall A.: *See—*
Prill, Robert S.; Metzger, Marshall A.; and Eaton, Bradley C., 3,739,197.

Meyer, Heinrich, to Wilhelm Harting Werk fur Elektrotechnik und Mechanik. Memory magnet controls for a machine which automatically changes records. 3,739,343, Cl. 340-162.00r.

Meyer, Theodore N.: *See—*
Binnings, Gerald F.; Meyer, Theodore N.; and Riley, Mel J., 3,738,730.

Davis, Robert D.; Meyer, Theodore N.; and Blizzard, Roy L., 3,738,824.

Meyers, Joseph A.: *See—*
Cahill, Joseph A.; Meyers, Joseph A.; and Sauer, Richard W., 3,739,034.

Michel, Jacques: *See—*
Semichon, Alain; and Michel, Jacques, 3,739,243.

Michelove, Leon: *See—*
Elwell, Robert M.; Kruse, Jurgen M.; and Michelove, Leon, 3,738,858.

Micro-Star Skate Company, Inc.: *See—*
Iseman, Richard W., 3,738,673.

Microsystems International Limited: *See—*
Freeman, John A.; and De Souza, David, 3,739,194.
Loro, Alberto, 3,739,236.

Middlebrook, Terence C., to Phillips Petroleum Company. Nonsmearing eraser elastomer compositions. 3,738,951, Cl. 260-23.70m.

Milchem Incorporated: *See—*
Browning, William C.; Chesser, Billy G.; and Wood, Jerry L., 3,738,934.

Miles, Floyd D., to International Telephone and Telegraph Corporation. Torque tube vacuum switch. 3,739,121, Cl. 200-144.00b.

Miles, Thomas R., to Foamat Foods Corporated. Apparatus for breaking up a dehydrated food mass. 3,738,596, Cl. 241-95.000.

Miles, Wilbur N.: *See—*
Benjamin, Milton L.; and Miles, Wilbur N., 3,738,767.

Millard, William E.: *See—*
Blezard, Robert C.; and Millard, William E., 3,738,125.

Miller, Arthur J.; Perkins, Raymond; and Sullivan, Harold E., 1/2 to Gracey, Jerome B. and 1/2 to Squatrito, Dominic J. Apparatus for cleaning film. 3,737,941, Cl. 15-302.000.

Miller Brothers: *See—*
Miller, Norman K., 3,739,129.

Miller, Charles Eveleigh, to International Telephone and Telegraph Corporation. Densitometer probe support. 3,738,155, Cl. 73-32.000.

Miller, Eddie. Combined chair and exercising device. 3,738,649, Cl. 272-58.000.

Miller, Franklin Elliott, to General Electric Company. Flow mixing selector valve. 3,738,107, Cl. 60-241.000.

Miller, George J.: *See—*
Hullett, David F.; Lytton, Kenneth G.; and Miller, George J., 3,738,476.

Miller, Harold R. Work holder. 3,738,606, Cl. 248-449.000.

Miller, Norman K., to Miller Brothers. Tube welding apparatus and method. 3,739,129, Cl. 219-10.530.

Miller, Oscar Neal: *See—*
Beaman, Alden Gamaliel; and Miller, Oscar Neal, 3,738,990.

Miller, Richard C., to Western Electric Company, Incorporated. Asymmetrical controlled current electroplating. 3,738,927, Cl. 204-228.000.

Miller, Roger L., to Kelsey-Hayes Company. Electronic speedometer/odometer with interchangeable calibrating means for accommodating a plurality of vehicle tire sizes. 3,739,270, Cl. 324-166.000.

Miller, Ronald H.: *See—*
Howlett, Robert J.; and Miller, Ronald H., 3,738,604.

Miller, Ruby A.: *See—*
Smith, Howard J., 3,738,067.

Mills, John Edward. Antiglare safety rearview mirror for automotive vehicles. 3,738,737, Cl. 350-278.000.

Milner, Maclin R.; and Johnston, Frederick B., to Trimex Corporation. Method of using combustion adjuvant. 3,738,819, Cl. 44-4.000.

Mims, James R., to Raytheon Company. Microwave magnetron. 3,739,225, Cl. 315-39.510.

Minegishi, Hiroshi, to Nippon Piston Ring Co., Ltd. Oil scraping piston ring. 3,738,668, Cl. 277-141.000.

Minnesota Mining & Manufacturing Company: *See—*
Loudas, Basil L.; and Vogel, Herward A., 3,738,962.

Minnesota Mining and Manufacturing Company: *See—*
Amundson, Arlon J.; and Hovind, Gary L., 3,739,143.

Minolta Camera Kabushiki Kaisha: *See—*
Hayashi, Masamichi, 3,738,747.

Miscellaneous Manufacturing Corporation: *See—*
Attaway, Julian J., 3,738,068.

Mishima Kosan Co., Ltd.: *See—*
Harada, Koosuke; and Takeuchi, Shinjiro, 3,739,396.

Mitani, Taizo; and Shirashaki, Takayuki, to Canon Kabushiki Kaisha. Lens attachment for flash-light photographing. 3,738,240, Cl. 95-11.00r.

Mitchell Industries, Inc.: *See—*
Younkin, James R., 3,739,382.

Mitchell, Thomas O., to Bennett Pump Incorporated. Liquid pumping system. 3,738,531, Cl. 222-52.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Katsumata, Takuma; Uchiyama, Hideo; and Marita, Yoshiharu, 3,739,184.

Mittler, Werner: *See—*
Sennewald, Kurt; Ohorodnik, Alexander; Mittler, Werner; Hundeck, Joachim; and Hardel, Hans-Joachim, 3,739,023.

Miyazaki, Eiichi: *See—*
Maeda, Haruo; and Miyazaki, Eiichi, 3,738,266.

Mizuno, Kiyohiko: *See—*
Goto, Kenji; Shibata, Norio; and Mizuno, Kiyohiko, 3,738,108.

Mobil Oil Corporation: *See—*
Ackley, Kenneth E.; and Courtney, William L., 3,738,565.
Godbey, John K.; Hawk, Daniel E.; and Slover, Vasel R., Jr., 3,739,331.

Moestue, Clarin: *See—*
Moestue, Hans Jacob; and Moestue, Clarin, 3,737,940.

Moestue, Hans Jacob; and Moestue, Clarin. Cleaning apparatus for offset printing machines. 3,737,940, Cl. 15-302.000.

Mohawk Data Sciences Corporation: *See—*
Coccagna, Edmund G., 3,739,288.

Moldovan, Michael Terrance, Jr.; Lindros, Charles Jerome; Wescott, Robert Dean; and Anderson, Lawrence Levi, to AVM Corporation. Electronic voting machine. 3,739,151, Cl. 235-54.00f.

Molins Machine Company Limited: *See—*
Labbe, Francis Auguste Maurice; and Powell, Gordon Francis Wellington, 3,738,376.

Moller, Bynum W. Golf exercising device. 3,738,661, Cl. 273-191.00r.

Mollevik, Asbjorn: *See—*
Jacobsen, Gunnar Monrad; and Mollevik, Asbjorn, 3,738,307.

Molybdenum Corporation of America: *See—*
Daugherty, Ellsworth W.; Erhard, Albert E.; and Drobnick, James L., 3,739,057.

Monarch Tool & Manufacturing Company: *See—*
Hall, Mitchell A., 3,738,134.

Monsanto Company: *See—*
Chupp, John P., 3,739,024.
D'Amico, John Joseph, 3,739,006.
Dobinson, Frank; and Silver, Frank M., 3,738,964.
Feiler, William A., Jr., 3,738,806.
Franz, Raymond A.; Montgomery, Phillip D.; and Gebhart, Herbert J., Jr., 3,739,038.
Ridgway, James S., 3,738,968.

Montecatini Edison S.p.A.: *See—*
Glatti, Flaviano; and Sanmartin, Pierantonio, 3,738,956.

Monten, Gordon A., to San Juan Products, Inc. Trailer for transporting one piece swimming pool shells. 3,738,515, Cl. 214-152.000.

Montgomery, Phillip D.: *See—*
Franz, Raymond A.; Montgomery, Phillip D.; and Gebhart, Herbert J., Jr., 3,739,038.

Moore, Elmor: *See—*
Moore, Jimmie; and Moore, Elmor, 3,738,762.

Moore, Jimmie; and Moore, Elmor. Disposable toothbrush. 3,738,762, Cl. 401-186.000.

Moore, Norman D. Metal art forms and method for producing the same. 3,738,417, Cl. 164-76.000.

Moore Products Co.: *See—*
Adams, Robert B., 3,738,391.

Moore, Robert David, Jr. Heatronic capacitor. 3,738,421, Cl. 165-32.000.

Moorefield, Carlton Swain. Electronic lock system. 3,739,340, Cl. 340-147.0md.

Moos, Jakob: *See—*
Brumm, Karl; Moos, Jakob; Weber, Jorg; Drott, Helmut; and Stelzig, Russelsheim, 3,738,197.

Moran, Paul J., to General Electric Company. High-speed data processing system. 3,739,350, Cl. 340-172.500.

Moran, Richard J., to McGraw-Edison Company. Overcurrent sensing and restraint control for sectionalizing switch. 3,739,229, Cl. 317-22.000.

Morane, Bruno P., to L'Oreal. Container for corrosive products to be stored under pressure. 3,738,540, Cl. 222-397.000.

Morelock, Charles R., to General Electric Company. Filament coating apparatus including mercury contact heating means. 3,738,314, Cl. 118-49.500.

Mori, Takakazu: *See—*
Kubo, Seitoku; Mori, Takakazu; Akashi, Teruo; and Hayashi, Chihiro, 3,738,199.

Mori, Takeshi: *See—*
Nagazumi, Yasuo; and Mori, Takeshi, 3,739,191.

Morita, Kazutoshi, to Sumitomo Electric Industries, Ltd. Method of granulating powder. 3,739,048, Cl. 264-.500.

Moriyama, Kizyu; and Takahashi, Sakae, to Daicel Ltd. Process for producing of styrene/acrylonitrile copolymers. 3,738,972, Cl. 260-88.50r.

Morman, Raymond A.: *See—*
Brien, Huron C.; Morman, Raymond A.; and Kaczmarzyk, Leonard M., 3,738,364.

Morrey, Walter T., to Bendix Corporation, The. CRT-sweep return circuit. 3,739,224, Cl. 315-27.0td.

Morrill, Myron C. Game with swingably supported impact member. 3,738,647, Cl. 273-40.000.

Morrison, Edward D.: *See—*
Dotson, Billy R.; Morrison, Edward D.; and Williams, Robert F., Jr., 3,738,924.

Morse, Douglas C. Combinational book for both normal reading and panoramic display. 3,738,686, Cl. 283-63.000.

Mosler Safe Company, The: *See—*
Smith, Douglas G.; Gagyi, Oltan; and Ross, Donald, 3,738,592.

Motorola, Inc.: *See—*
Davidsohn, Uryon S., 3,738,877.
Griffey, Donald E., 3,739,094.
Lace, Melvin A., 3,739,366.
Single, David, 3,738,939.
Zoroglu, Demir S.; and George, William L., 3,737,985.

Mott, James D., to Hydril Company. Method of removing and replacing ram seals. 3,737,974, Cl. 29-401.000.

Motz, Carl H.; Anthony, Russell W.; and Peterson, George C., to Lear Siegler, Inc. Gear rolling machine. 3,738,140, Cl. 72-94.000.

Mudrak, Anton; and Zelek, John A., to Kewanee Oil Company. Disperse and direct terephthaloyl chloride-aminoazobenzene cotton dye mixture and polyester and cellulose dyeing with said mixture. 3,738,800, Cl. 8-21.00c.

Mueller, Allen H.: *See—*
Wilson, Ernest; and Mueller, Allen H., 3,738,445.

Mueller Co.: *See—*
Luckenbill, Lawrence F., 3,738,390.

Muller, Peter, to Cerberus AG. Apparatus for detection of a fire or of flames. 3,739,365, Cl. 340-228.200.

Murai, Kagru, to Yoshio Yazaki. High-pressure mercury vapor lamp provided with a cooling water jacket. 3,739,215, Cl. 313-24.000.

Murakami, Keiichi: *See—*
Tomiyama, Shinichi; Susuki, Rinnosuke; Hoshi, Hiroshi; Saito, Jiro; Goto, Hiro; Umehara, Kenji; and Murakami, Keiichi, 3,739,060.

Murakami, Noboru; Nishida, Koji; and Hashimoto, Nobuyuki, to Aisin Seiki Kabushiki Kaisha. Hydraulic released clutch controlled by engine speed and shift switches. 3,738,460, Cl. 192-3.580.

Murphy, Robert M.; and Powell, Concrad M., to Arrow-Hart, Inc. Dust seal for electric connectors. 3,739,321, Cl. 339-103.00b.

Myers, Loyd D.: *See—*
Arnold, James G.; and Myers, Loyd D., 3,739,286.

Nagazumi, Yasuo; and Mori, Takeshi, to Nissan Motor Company, Limited. Vehicular deceleration sensor using caviation phenomena in electrically conductive liquid. 3,739,191, Cl. 307-121.000.

Nagel, Alice R. Chain lock. 3,738,132, Cl. 70-49.000.

Nagus, Wilfred: *See—*
Landsinger, Edmund E.; Nagus, Wilfred; Papavasiliou, Prodromos; and Stewart, George W., Jr., 3,738,036.

Nagyvary, Joseph, to United States of America, Health, Education and Welfare. Compound, O^2, 2'-cyclocytidine-3' phosphate and process for producing same. 3,738,979, Cl. 260-211.500.

Naill, Willis D. Eel holder. 3,738,050, Cl. 43-53.500.

Nakagawa, Shiro: *See—*
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Nakajima, Hayato: *See—*
Takehisa, Masaaki; Senrui, Shiro; Kurihara, Hirondo; Maruyama, Yoshio; Watanabe, Hiromasa; Nakajima, Hayato; Touhei, Masamichi; Simada, Takeo; Suwa, Takesi; Takasaka, Yoshio; and Hashiba, Hideyuki, 3,738,974.

Nakamachi, Hideo: *See—*
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Nakano, Kinichi: *See—*
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Nakano, Zenichi, to Hitachi, Ltd. Circuit breaker. 3,739,123, Cl. 200-148.00r.

Nalco Chemical Company: *See—*
Stanford, James R.; and Watson, James D., 3,739,046.
Stanford, James R.; and Vogelsang, Paul G., Jr., 3,739,047.

Nalley, Robert E., to Hydrill Company. Gas flow calculation system. 3,739,159, Cl. 235-151.340.

Nansel, Harold K., to National Crane Corporation. Extendible boom with latch means for extension and retraction. 3,738,075, Cl. 52-115.000.

Naoshi Kubo: *See—*
Inoue, Giichi; Kubo, Naoshi; and Hatano, Shogo, 3,738,115.

Narayanan, Venkatachala L.: *See—*
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Nash, John Barry: *See—*
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Nastjukha, Alexandr Ivanovich; Bespalov, Oleg Georgievich; Knyazyatov, Andrei Serafimovich; Smirnov, Pavel Alexandrovich; and Udovenko, Alexandr Nikolaevich. Gas-discharge switching device. 3,739,227, Cl. 315-338.000.

National Advertising Company: *See—*
Schubert, Wilfried, 3,738,040.

National Can Corporation: *See—*
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National Cash Register Company, The: *See—*
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National Manufacturing Co.: *See—*
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National Research Development Corporation: *See—*
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Natmar, Inc.: *See—*
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Navarrette-Kindelan, Octaviano De J., to Anthropos, Inc., mesne. Modular building construction. 3,738,069, Cl. 52-73.000.

Navi, Menashe; and Levy, Murray N., to Gottscho, Adolph, Inc. Article controlled bottom marking apparatus. 3,738,260, Cl. 101-35.000.

Nechine, Leonard M., to FMC Corporation. Removable deep tank gas diffusing apparatus. 3,738,628, Cl. 261-122.000.

Nederveld, Terrill L., to Packaging Corporation of America. Space divider. 3,738,561, Cl. 229-15.00r.

Negrou, Jacques, to Commissariat a l'Energie Atomique. Generator of a time interval as a multiple of a base period. 3,739,199, Cl. 307-260.000.

Nehmes, John A.: *See—*
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Neidl, Georg. Apparatus for comminuting, separating, manipulating and pumping materials. 3,738,582, Cl. 241-46.110.

Neitzel, Joseph C.; and Strandberg, Robert C., 50% to Hardwick-Etter Company and 50% to Strandberg Engineering Laboratories, Inc. System for sensing variations in the dielectric constant of a flow of material. 3,739,266, Cl. 324-61.00r.

Nelson, Arthur John. Apparatus and method to establish and sustain a subaqueous strata drilling system. 3,738,434, Cl. 175-6.000.

Nelson, Eldrid W.: *See—*
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Nemo Corporation: *See—*
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Ness, William G., to Arctic Enterprises, Inc. Tread for motor driven vehicles. 3,738,714, Cl. 305-24.000.

Nesslage, Donald J.: *See—*
Hartmann, George J.; and Nesslage, Donald J., 3,738,419.

Neubeck, W. H., Jr.; and Kloska, Anthony J., to Griffith Laboratories, Inc., The. Continuous automatic frankfurter unloader. 3,738,554, Cl. 226-104.000.

Newlon, Robert L., to Lawrence Brothers, Inc. Safety gate hook. 3,738,133, Cl. 70-108.000.

Newman, Neil F.: *See—*
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Nexus, Inc.: *See—*
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Nezbed, Robert L.; and Zamzow, William H., to Kraftco Corporation. Method for spray drying coffee whitener. 3,738,412, Cl. 159-48.00r.

Nicely, Thomas E.: *See—*
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Nicholl, Thomas H. Collapsible warning device. 3,738,309, Cl. 116-63.00p.

Nicholls, Augustus H. Mixing and proportioning syringe. 3,738,535, Cl. 222-137.000.

Nickel, Warren A.: *See—*
Zundel, Arthur P.; Patarini, Leon M.; Nickel, Warren A.; and Kratochvil, Frank, 3,738,526.

Nielsen, Robert J. Locked socket wrench. 3,738,202, Cl. 81-121.00b.

Niemand, Emil: *See—*
Marquis, Edgar E.; and Niemand, Emil, 3,738,178.

Niinomi, Naoyuki, to Nippon Gakki Seizo Kabushiki Kaisha. Tone-color forming circuit in electronic musical instrument. 3,739,071, Cl. 84-1.190.

Nippon Electric Company Limited: *See—*
Furuhashi, Tokio, 3,739,292.
Noda, Toshimasa; Hanaoka, Masafumi; and Kouno, Akiyoshi, 3,739,079.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
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Niinomi, Naoyuki, 3,739,071.

Nippon Kogaku K.K.: *See—*
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Shimizu, Yoshiyuki, 3,738,736.
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Nippon Kokan Kabushiki Kaisha: *See—*
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Nippon Piston Ring Co., Ltd.: *See—*
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Nippon Piston Ring Kabushiki Kaisha: *See—*
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Nippondenso Co., Ltd.: *See—*
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Nishida, Koji: *See—*
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Nishimoto, Tatsuya: *See—*
Osada, Mitsuo; Kumon, Osamu; and Nishimoto, Tatsuya, 3,738,936.

Nishimura, Kazuo, to Kabushiki Kaisha Meidensha. Method for producing a mechanical stress detecting device. 3,737,994, Cl. 29-606.000.

Nishinomiya, Tomekichi. Device for the removal of detrimental matter from exhaust gases of internal combustion engines. 3,738,085, Cl. 55-35.000.

Nishiyama, Akio: *See—*
Hino, Tetsuo; Orita, Takao; Kozu, Isao; Fujisawa, Kiyoji; and Nishiyama, Akio, 3,738,021.

Nissan Motor Company, Limited: *See—*

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Nitz, Rolf-Eberhard: *See—*
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Nnited States of America, Army: *See—*
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Noah, Edward Lewis, to Recognition Equipment Incorporated. Document feeder. 3,738,641, Cl. 271-28.000.
Noda Plywood Mfg., Co., Ltd.: *See—*
Oishi, Yumio, 3,738,854.
Noda, Toshimasa; Hanaoka, Masafumi; and Kouno, Akiyoshi, to Nippon Electric Company, Limited. Color television camera using only two camera tubes. 3,739,079, Cl. 178-5.4st.
Noeske, Heinz O., to General Electric Company. Puffer-type gas-blast circuit breaker. 3,739,125, Cl. 200-148.00a.
Nogai, Alfred: *See—*
Wieden, Horst; Nogai, Alfred; and Marzolph, Herbert, 3,739,054.
Noller, Fred W., to Massey-Ferguson, Inc. Fork lift leveling control. 3,738,502, Cl. 212-145.000.
Norback, Per Gunnar, to Aktiebolaget Carl Munters. Device in contact bodies for liquid and gas. 3,738,626, Cl. 261-112.000.
Nordeen, Erwin E., to Whirlpool Corporation. Rotary brush construction for vacuum cleaner. 3,737,937, Cl. 15-182.000.
Norman, Donald; and Cherba, Samuel. Finger, hand and forearm developer. 3,738,651, Cl. 272-67.000.
North American Aviation, Inc.: *See—*
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North American Manufacturing Company: *See—*
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Nottingham, Ralph B. Underwater siren. 3,738,446, Cl. 181-.5ag.
NSM Apparatebau GmbH: *See—*
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Nukem Nuklear-Chemie und-Metallurgie, GmbH: *See—*
Rachor, Lothar; and Hackstein, Karl-Gerhard, 3,738,912.
Nutten, Warren D.; and Phillips, Bernard C., to Borg-Warner Corporation. Charge forming method and apparatus with overspeed governor. 3,738,608, Cl. 251-76.000.
Oberdorfer Foundries, Inc.: *See—*
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Ochnle, Robert Charles: *See—*
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Oertel, Gunter; Dahm, Manfred; Holtschmidt, Hans; and Roegler, Manfred, to Bayer Aktiengesellschaft. Stabilizers for cellular polyurethanes. 3,739,014, Cl. 260-472.000.
Office National d'Etudes et de Recherches Aerospatiales (par abreviation: O.N.E.R.A.): *See—*
Genot, Jeanne, nee Delarbre; Le Grives, Emile; and Berland, Guy, 3,738,771.
Ogasawara, Toyotsugu, to Tomy Kogyo Co., Ltd. Toy vehicle. 3,738,057, Cl. 46-243.000.
Ogiso, Mitsutoshi: *See—*
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Ohorodnik, Alexander: *See—*
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Ohsuga, Masao: *See—*
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Oishi, Yumio, to Noda Plywood Mfg., Co., Ltd. Process for making decorative boards. 3,738,854, Cl. 117-8.000.
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Takahama, Sho; Okano, Takeshi; and Igarashi, Shunkichi, 3,738,486.
O'Larte, Fermin M. Aircraft insurance calculator. 3,739,155, Cl. 235-89.000.
Olcott, Eugene L., to Atlantic Research Corporation, mesne. Pyrolytic graphite-silicon carbide microcomposites. 3,738,906, Cl. 161-168.000.
O'Leary, Paul C. Hydraulically-motivated, rope-operated feed device for rock drills and the like. 3,738,433, Cl. 173-147.000.
Olin Corporation: *See—*
Pryor, Michael J.; Crane, Jacob; and Winter, Joseph, 3,738,827.
Olinger, Donald Richard, to Rome Industries, Inc. Combination bulldozer blade and bucket. 3,738,030, Cl. 37-117.500.
Olivetti, Ing., C., & C., S.p.A.: *See—*
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Olson & Sons, Incorporated: *See—*
Olson, Buford W., Sr.; Nelson, Eldrid W.; and Davidson, Albin A., 3,738,285.
Olson, Buford W., Sr.; Nelson, Eldrid W.; and Davidson, Albin A., to Olson & Sons, Incorporated. Convertible rail-highway vehicle. 3,738,285, Cl. 105-215.00c.
Olson, Harland D.: *See—*
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Olson, John M., to Ikon Engineering, Inc. Internal combustion engine limiter. 3,738,340, Cl. 123-118.000.
Olsson, Kurt Ove, to Hasselblad, Fritz Victor. Control mechanism at photographic cameras for film advance in separate film magazines equipped with a servomotor. 3,738,243, Cl. 95-31.0ac.
Olympia Werke AG: *See—*
Bettin, Hubertus, 3,739,162.
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Omark Industries, Inc.: *See—*
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Omega Louis Brandt & Frere S.A.: *See—*
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Vuilleumier, Cyril, 3,738,097.
O'Neal, James Everett; Gunter, Josef Karl; and Gunter, Colie Walton. Carding machine fiber and air control method and means. 3,737,952, Cl. 19-107.000.
O'Neill, Cormac G., to Physics International Company. Injection nozzle for direct injection engine. 3,738,576, Cl. 239-533.000.
O'Neill, John Francis, to Bell Telephone Laboratories, Incorporated. Key telephone system signaling circuit. 3,739,104, Cl. 179-81.00c.
Optimetric Systems, Inc.: *See—*
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Orr, John E. Adjustable preformed necktie. 3,737,917, Cl. 2-150.000.
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Orris, John A., to United Engineering and Foundry Company. Adjustable beam turn-up and beam turn-down arms for cooling bed service. 3,738,143, Cl. 214-1.0qg.
Ortheil, Hans: *See—*
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Ortlip, Earl W.; and Smith, Wallace M. Drop boot to prevent wind loss of finely-divided fluent materials. 3,738,464, Cl. 193-25.000.
Orts, Donald H., to Armco Steel Corporation. Method of manufacturing thermocouples. 3,737,996, Cl. 29-612.000.
Orwin Associates Inc.: *See—*
Symer, Orten Henry; and Bearce, Winfield Scott, 3,739,223.
Osada, Mitsuo; Kumon, Osamu; and Nishimoto, Tatsuya, to Sumitomo Electric Industries, Ltd. Ferroelectric and piezoelectric composition. 3,738,936, Cl. 252-62.900.
Osaka Cement Co., Ltd.: *See—*
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Osaka Consulting Engineers, Ltd.: *See—*
Inoue, Giichi; Kubo, Naoshi; and Hatano, Shogo, 3,738,115.
Osaka, Takatoshi, to Citizen Watch Company Limited. Power driven type action in electric typewriter. 3,738,470, Cl. 197-17.000.
Osborn, Fred; and Kinney, Selwyne P., to Kinney, S. P., Engineers, Inc. Method of and apparatus for the processing of molten slag. 3,738,820, Cl. 65-19.000.
Osmun, Dean W.; Johnson, Charles W.; and Plummer, Ray A., to Big Three Industries, Inc. Method for controlling offshore petroleum wells during blowout conditions. 3,738,424, Cl. 166-298.000.
Ossenkop, Robert J.; and Wilson, Alfred L., to AMF Incorporated. Doorway gym bars. 3,738,650, Cl. 272-62.000.
Ostapchenko, George Joseph: *See—*
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Oswald, Joseph V. Non-oscillating arcless switching of inductive D.C. loads. 3,739,192, Cl. 307-136.000.
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Oxford, John A. Prefabricated bed structure. 3,737,925, Cl. 5-131.000.

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Packler, Mel A.; and Cokee, Jordan. Emblems which will glow in the dark and the method of making them. 3,738,299, Cl. 112-439.000.
Padjen, George; Helman, Robert W.; and Brugger, Joseph A., to Bethlehem Steel Corporation. Molten metal bath level maintenance system. 3,738,312, Cl. 118-2.000.
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Paksswer, Serge, to Zenith Radio Corporation. Secondary electron multipliers with single layer cermet coatings. 3,739,216, Cl. 313-95.000.
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Palman, Leonard. Security devices. 3,739,114, Cl. 200-44.000.
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Pannetti, Romolo. Device for grinding long undulation waves of railway rails. 3,738,066, Cl. 51-178.000.
Panzer, Hans Peter; and Dixon, Kenneth Wayne. Polyquaternary flocculants. 3,738,945, Cl. 260-2.0bp.
Pap, Geza: *See—*
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Parsons, Ronald, to Singer Company (U.K.) Limited, The. Tufting machines. 3,738,293, Cl. 112-79.00r.
Partridge, Mildred F. Auto racing board game apparatus. 3,738,659, Cl. 273-134.0ag.
Pass & Seymour, Inc.: *See—*
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Adolphi, Heinrich; Eilingsfeld, Heinz; Patsch, Manfred; and Schaffner, Ernst, 3,739,045.
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Patzwahl, Hans-Jurgen: *See—*
Pusching, Klaus-Dieter; Patzwahl, Hans-Jurgen; and Kretschmer, Horst, 3,738,891.
Paul, Henry N., III, to Thiokol Chemical Corporation. Synergistic flame retarding composition for polypropylene of 1,2,3,4, 5-pentabromo-6-chlorocyclohexane, tetrabromophthalic anhydride and antimony trioxide. 3,738,958, Cl. 260-45.75b.
Paul, William, to Switchpack Systems, Inc., mesne. Electromagnetic switching device with movable rachet. 3,739,308, Cl. 335-140.000.
Pauls, Edward A. Ski equipped crutch. 3,738,674, Cl. 280-11.37b.
Paustian, John E.: *See—*
Fein, Marvin M.; and Paustian, John E., 3,739,059.
Pauze, Denis R.: *See—*
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Pawlek, Franz: *See—*
von Stirck, Axel; and Pawlek, Franz, 3,738,826.
Pawloski, Chester E.; and Stewart, Russell L., to Dow Chemical Company. Reactor for removing olefins from acetylenic and olefin-containing gaseous hydrocarbon mixtures. 3,738,815, Cl. 23-260.000.
Pawloski, Chester E., to Dow Chemical Company, The. Substituted 1,3-dioxepins. 3,738,997, Cl. 260-338.000.
Paxhia, Vincent B.: *See—*
Earl, T. Desmond; and Paxhia, Vincent B., 3,738,597.
Payen, Jean-Pol, to Merlin Gerin, Societe Anonyme. High speed vehicle current collecting device. 3,739,108, Cl. 191-58.000.
Payet, George L.: *See—*
Forg, John H.; and Payet, George L., 3,738,019.
Paymal, Jean, to Compagnie de Saint-Gobain. Apparatus for making laminated structural panel of cellular foamed resin. 3,738,895, Cl. 156-443.000.
Pechiney-Progil: *See—*
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Peck, Donald W.: *See—*
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Pedrazzoli, Andrea: *See—*
Gradnik, Boris; Pedrazzoli, Andrea; and Dall'Asta, Leone, 3,739,030.
Peeples, Maurice E. Golf practice range. 3,738,664, Cl. 273-176.00k.
Peirsman, Mathieu Adrien Roger: *See—*
Janssens, Juliaan Leo Gerard; and Peirsman, Mathieu Adrien Roger, 3,739,345.
Pejcha, Ivan, to Information Storage Systems, Inc. Centering device. 3,737,969, Cl. 29-203.00p.
Pell, Lawrence W.: *See—*
Picard, Jean P.; Voigt, H. William, Jr.; and Pell, Lawrence W., 3,738,276.
Penner, David. Note pad device using paper rolls. 3,738,685, Cl. 281-8.000.
Pennington, John C.: *See—*
Branz, Weldon K.; Pennington, John C.; and Terpening, Leslie E., 3,738,660.
Peppel, William Jennings; Schulze, Heinz; and Marquis, Edward Thomas, to Jefferson Chemical Company, Inc. Continuous preparation of nitrilotriacetic acid. 3,739,021, Cl. 260-531.00c.
Periard, John Neil, to Dow Chemical Company, The. Production of a paper pigment grade magnesium hydroxide product. 3,739,058, Cl. 423-161.000.
Perkin-Elmer Corporation, The: *See—*
Bohler, Walter, 3,739,164.
Landsman, Robert M., 3,739,088.
Perkins, Raymond: *See—*
Miller, Arthur J.; Perkins, Raymond; and Sullivan, Harold E., 3,737,941.
Perminov, Evgeny Mikhailovich. Die and method of making the same. 3,738,148, Cl. 72-362.000.
Perot, Gilbert; Labin, Emile; and Da Silveira, Miguel, to Pechiney-Progil. Hybrid navigation system. 3,739,383, Cl. 343-112.00r.
Peroy, Francois: *See—*
Rouvre, Philippe; and Peroy, Francois, 3,739,314.
Perry, Blanche: *See—*
Cummins, Laurence M.; and Perry, Janet B., 3,738,493.
Perry, Janet B.: *See—*
Cummins, Laurence M.; and Perry, Janet B., 3,738,493.
Persson, Karl Rune, to Sprinter Pack AB. Hexagonal package unit. 3,738,564, Cl. 229-36.000.
Peruglia, Marco, to Fiat Societa per Azioni. Solenoid-operated, two-way, two-position valve with bidirectional flow. 3,738,607, Cl. 251-30.000.
Peruglia, Marco, to Fiat Societa per Azioni. Vehicle anti-skid braking apparatus. 3,738,713, Cl. 303-21.00f.
Peters, Albert: *See—*
Reinhardt, Helmut; Brandt, Bernd; and Peters, Albert, 3,738,785.
Peterson, Earl A. Hoisting apparatus employing unitary clutch and brake assembly. 3,738,614, Cl. 254-187.000.
Peterson, George C.: *See—*
Motz, Carl H.; Anthony, Russell W.; and Peterson, George C., 3,738,140.
Petrusek, Victor. Animal action toy. 3,738,054, Cl. 46-141.000.
Pettit, Alexander, to Pilkington P.E. Limited. Optical display systems. 3,738,733, Cl. 350-174.000.
Pfaff Industriemaschinen GmbH: *See—*
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Pfaff Industriemaschinen GmbH, Firma: *See—*
Hintzen, Peter; Jehle, Fritz; and Willenbacher, Erich, 3,738,292.
Pfau, Jean; and Schaidl, Hubert, to Ateliers des Charmilles S.A. Electro-erosion machining apparatus. 3,739,135, Cl. 219-69.00g.
Pfizer Inc.: *See—*
Liebrand, Jerome T., 3,738,845.
Phelps Dodge Cooper Products Corporation: *See—*
Mc Kean, Alexander L., 3,739,272.
Phelps Dodge Copper Products Corporation: *See—*
Hartmann, George J.; and Nesslage, Donald J., 3,738,419.
Philadelphia Gear Corporation: *See—*
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Phillips, Bernard C.: *See—*
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Physics International Company: *See—*
O'Neill, Cormac G., 3,738,576.
Picard, Jean P.; Voigt, H. William, Jr.; and Pell, Lawrence W., to United States of America, Army. Container with controllably desensitized explosive mixtures. 3,738,276, Cl. 102-7.200.
Picciola, Giampaolo; and Rovati, Luigi, to Rotta Research Laboratorium S.p.A. Method of preparing alpha amides. 3,739,013, Cl. 260-471.00r.
Pierzchala, Chester E., to Reliable Electric Company. High voltage arc extinguishing circuit interrupter. 3,739,122, Cl. 200-146.00r.
Pietroski, Alex J., to General Motors Corporation. Blending device. 3,737,984, Cl. 29-567.00r.
Pilkington P.E. Limited: *See—*
Pettit, Alexander, 3,738,733.
Pineau, Andre Lucien. Shock and vibration damper. 3,738,633, Cl. 267-141.000.
Pinkerton, Lyle C. Reversing mechanism for inboard-outboard boat drive. 3,738,306, Cl. 115-35.000.
Piombino, John: *See—*
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Pitney-Bowes, Inc., mesne: *See—*
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Pittman, Richard D.: *See—*
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Plant Industries, Inc.: *See—*
Roper, William H.; and Ross, Robert N., 3,738,538.
Planten, James M. Method of molding articles and reclaiming the foundry sand used. 3,738,415, Cl. 164-5.000.
Plasmachem, Inc.: *See—*
Davis, Robert D.; Meyer, Theodore N.; and Blizzard, Roy L., 3,738,824.
Plasti-Kate Company: *See—*
Madeira, John W., 3,738,760.
Plockinger, Erwin; and Holzgruber, Wolfgang, to Gebr. Bohler & Co. Aktiengesellschaft. Process of manufacturing forged or rolled rod steel from ledeburitic tool steel. 3,737,981, Cl. 29-527.700.
Ploeger, Kenneth C., to Rupert Manufacturing Company, Inc. Vehicle lamp and terminal therefor. 3,739,168, Cl. 240-7.10r.
Plummer, Ray A.: *See—*
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Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes: *See—*
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Pobl, Konrad: *See—*
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Pohla, Alfred: *See—*
Pollinger, Hans; Pohla, Alfred; and Kirchlechner, Hans, 3,738,680.
Point, Marcel, to Air Industrie. Apparatus for testing electrical contact between metallic objects. 3,739,228, Cl. 317-3.000.
Pokrinchak, Jordan J.; and Corris, Charles J., to Jordan Research Corporation. Electronic trailer brake actuator. 3,738,710, Cl. 303-20.000.
Polar Ware Corporation: *See—*
Gokey, Phillip E.; and Rose, Frederick A., 3,739,186.
Pollinger, Hans; Pohla, Alfred; and Kirchlechner, Hans, to Knorr-Bremse GmbH. Pneumatic suspension system for vehicles. 3,738,680, Cl. 280-124.00f.
Polymer Processing Research Institute, Ltd.: *See—*
Yazawa, Masahide, 3,739,053.
Pommier, Pierre, to Societe Anonyme dite: Cefilac. Device for setting fire rings in cylinder head gaskets. 3,737,967, Cl. 29-200.00b.
Ponder, Billy W.; and Barnhill, Charles W., to United States of America, Army. Synthesis ferrocenyl butadiene compounds. 3,739,004, Cl. 260-439.0cy.
Pool, Byron K.: *See—*
Lowe, Paul E.; and Pool, Byron K., 3,738,898.
Poppe, Martin C., Jr.; and Masoian, Leon M., to Beukers Laboratories, Inc. Duplexed antenna for retransmission devices. 3,739,390, Cl. 343-729.000.
Porsche, Dr.-Ing. H.c.F., K.G., Firma: *See—*
Hausinger, Otto,, 3,738,452.
Posey, J. Thornton, d/b/a Posey Company: *See—*
Whaley, Robert C., Jr., 3,738,654.
Post, John S.; and Reed, Frederick P., to United States of America, Army. Obturator-extractor device for firearms. 3,738,223, Cl. 89-26.000.
Post, John S.; and Reed, Frederick P., to United States of America, Army. Obturated firearm breech safety device. 3,738,224, Cl. 89-26.000.
Postulka, Simon; Vorderbrugge, Hermann; and Thermann, Hans-Christof, to Windel, Hermann, Firma. Roller construction. 3,737,963, Cl. 29-130.000.
Pottle, Arthur Richard, to AMP Incorporated, mesne. Remote switching system. 3,739,187, Cl. 307-29.000.
Poux, Robert J.; and Deutsch, Peter R., to Phillips Petroleum Company. Apparatus and method for controlling temperature in a feed screw. 3,738,420, Cl. 165-1.000.
Powell, Concrad M.: *See—*
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Powell, Gordon Francis Wellington: *See—*
Labbe, Francis Auguste Maurice; and Powell, Gordon Francis Wellington, 3,738,376.
Powers Chemico, Inc.: *See—*
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Powers, Joseph W., Jr.: *See—*
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PPG Industries, Inc.: *See—*
Dunnom, Donald D., 3,738,948.
Franz, Helmut, 3,738,867.
Praetorius, Heinz; and Vogts, Axel, to Akzo N.V. Process for the production of polycarbonates. 3,738,963, Cl. 260-47.0xa.
Price, Maynard L. Control device for parenteral liquid feed apparatus. 3,738,361, Cl. 128-214.00e.
Pricer, David, to International Business Machines Corporation. Heterojunction information storage unit. 3,739,356, Cl. 340-173.00r.
Priestley, Hill M.; and Wilson, James H., to Lever Brothers Company. Dodecyl 2-hydroxyethyl sulfoxide. 3,739,031, Cl. 260-607.00a.
Prill, Robert S.; Metzger, Marshall A.; and Eaton, Bradley C., to Singer Company, The. Track and hold buffer amplifier. 3,739,197, Cl. 307-238.000.
Process Evaluation and Development Corporation: *See—*
Villaviecencio, Eduardo J., 3,738,908.
Procter & Gamble Company, The: *See—*
Rizzi, George P., 3,739,064.
Prolo, Donald J. Cervical stabilization device. 3,737,923, Cl. 5-82.000.
Proops, William Alfred; and Bridges, Stuart Apsley, to United Kingdom of Great Britain and Northern Ireland, Minister of State for Defense in Her Britannic Majesty's Government of the. Metal working. 3,738,139, Cl. 72-69.000.
Prost, Hans: *See—*
Deserno, Peter; Kauderer, Friedrich; and Prost, Hans, 3,739,281.
Prumm, Georg. Tester for different types of coins. 3,738,469, Cl. 194-101.000.
Prumm, Margot. Coin checking device. 3,738,468, Cl. 194-100.00a.
Pryor, Michael J.; Crane, Jacob; and Winter, Joseph, to Olin Corporation. Method for adding solid metal to molten metal. 3,738,827, Cl. 75-76.000.
Pryor, Richard Lee, to RCA Corporation. Logic circuit. 3,739,193, Cl. 307-205.000.
Psyras, Hippocrates G.: *See—*
Bellisio, Arthur A.; Psyras, Hippocrates G.; and Fein, Marvin M., 3,738,086.
Pugsley, Peter C.; and Dobouny, Mouayed E., to Crosfield Electronics Limited. Apparatus for reproducing coloured images. 3,739,078, Cl. 178-5.20a.
Pusching, Klaus-Dieter; Patzwahl, Hans-Jurgen; and Kretschmer, Horst, to Kronseder, Hermann. Labeling machine with speed adjusting mechanism. 3,738,891, Cl. 156-363.000.
Puzniak, Thomas J.: *See—*
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Quaker Oats Company, The: *See—*
Bechtel, Peter J., 3,738,847.
Bozer, Keith B.; Brown, Lloyd H.; and Eftax, Daniel S. P., 3,738,955.
Quarles, Richard W., Jr., to Du Pont de Nemours, E. I., and Company. Perfluoro-phenoxypropionic acid and esters and salts thereof. 3,739,016, Cl. 260-473.00g.
Quermerais, Philippe, to Regie Nationale des Usines Renault and Automobiles Peugeot. Pressure-fluid electromagnetic valves. 3,738,386, Cl. 137-625.640.
Questor Corporation: *See—*
Sharaf, Ernest S., 3,737,958.
R. D. Products, Inc.: *See—*
Dalton, Robert L., 3,738,836.
Race, Martin L.; and Martiniak, Leonard J., to General Electric Company. Appliance anti-tip device. 3,738,727, Cl. 312-276.000.
Rach, Heinz-Dieter; and Grollich, Ekkehard, to Continental Gummi-Werke Aktiengesellschaft. Pneumatic tire with an asymmetrical folded belts. 3,738,408, Cl. 152-361.0fp.
Rachor, Lothar; and Hackstein, Karl-Gerhard, to Nukem Nuklear-Chemie und-Metallurgie, GmbH. Fuel element for high temperature reactor. 3,738,912, Cl. 176-71.000.
Racine, William H., to Test Tools, Inc. Quick mount fitting. 3,738,688, Cl. 285-312.000.
Radcliffe, Arthur J., Jr., to Burroughs Corporation. Sense amplifier for high speed memory. 3,739,355, Cl. 340-173.00r.
Raddi, William J.; Johnson, Robert W.; and Smithmyer, Joseph W., to ESB Incorporated. Cardiac pacers with source condition-responsive rate. 3,738,371, Cl. 128-419.00p.

Radell, Eugene A.; Rauner, Frederick J.; and Houle, James F., to Eastman Kodak Company. Lithographic plate desensitizer formulations. 3,738,850, Cl. 106-2.000.

Radion Development Corporation: *See*—
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Ragosine Oil Company, Limited: *See*—
Jarvis, William Harding, 3,738,851.

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Joug, Roland; and Ragout, Bernard, 3,739,203.

Rahn Granite Surface Plate Company: *See*—
Rahn, Rudolph J., 3,739,150.

Rahn, Rudolph J., to Rahn Granite Surface Plate Company. Surface plate and controls therefor. 3,739,150, Cl. 219-448.000.

Rakich, Antone F.; Lozano, Luis J.; and Nehmes, John A., to Anaconda American Brass Company. Method of manufacturing longitudinally welded strips of different thicknesses and widths. 3,737,979, Cl. 29-480.000.

Ramier, Georges: *See*—
Lyon, Remy Blanc; Hess, Willy; and Ramier, Georges, 3,738,803.

Ramsey Engineering Company: *See*—
Schaaf, Gunther, 3,738,078.

Ranz, James R., to Lau Incorporated. Method of constructing a bladed blower wheel. 3,737,966, Cl. 29-156.8cf.

Raschle, Josef, to Heberlein & Co., AG. Yarn heating apparatus. 3,738,017, Cl. 34-154.000.

Rash, Kenneth E., Jr.; Colmey, John C.; and Zanzig, Charles E., to Foremost-McKesson, Inc. Confections containing low-ash demineralized whey solids. 3,738,844, Cl. 99-134.00r.

Rathbun, Robert R., to Aeronca, Inc. Brazing method. 3,737,978, Cl. 29-472.300.

Rattner, Leonard C. Box. 3,738,041, Cl. 40-130.00c.

Ratts, Kenneth Wayne. Dimethylsulfonium-2-[(alkoxycarbonyl) carbonyl] phenacyhides and derivatives thereof. 3,739,012, Cl. 260-470.000.

Rauma, John G., to Griswold and Rauma, Architects, Inc. Combination eating counter and self-contained garbage receptable unit. 3,738,724, Cl. 312-140.100.

Rauner, Frederick J.: *See*—
Radell, Eugene A.; Rauner, Frederick J.; and Houle, James F., 3,738,850.

Ray, Robert L., to Dayco Corporation. Power transmission belt and method of making same. 3,738,188, Cl. 74-234.000.

Raymond Corporation, The: *See*—
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Raytheon Company: *See*—
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RCA Corporation: *See*—
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Kessler, Sebastian William, Jr., 3,739,235.
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Recognition Equipment Incorporated: *See*—
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Redel, Karl-Georg: *See*—
Ermold, Edgar; Schwartz-Domke, Hans F. W.; Scheidig, Helmut; and Redel, Karl-Georg, 3,739,066.

Reed, Delmer H., to Union Carbide Corporation. Latex compositions. 3,738,991, Cl. 260-296.0rw.

Reed, Frederick P.: *See*—
Post, John S.; and Reed, Frederick P., 3,738,223.
Post, John S.; and Reed, Frederick P., 3,738,224.

Reed, Glenn A.: *See*—
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Reed, Malcolm E.: *See*—
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Rees, John Michael: *See*—
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Regie Nationale des Usines Renault: *See*—
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Quermerais, Philippe, 3,738,386.
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Regnier, Marc Andre: *See*—
Chatelon, Andre Edouard Joseph; and Regnier, Marc Andre, 3,739,375.

Reichmann, Horst, to Vaillant, Joh., KG. Oil-heated once-through heater with apparatus for pre-heating the mixing chamber. 3,738,352, Cl. 126-351.000.

Reid, Jack M.; Weil, Sanford A.; Mason, David M.; and Staats, William R., to Institute of Gas Technology, The. Illumination burner. 3,738,793, Cl. 431-328.000.

Reid, James F.: *See*—
Copeland, John R.; and Reid, James F., 3,739,346.

Reider, Thomas T.: *See*—
Tait, Stuart S.; and Reider, Thomas T., 3,738,734.

Reil, Wilhelm, to Sobrefina S.A. Packing machine. 3,738,080, Cl. 53-180.000.

Reilly, Edward L., to Du Pont de Nemours, E. I., and Company. Oxidation of ethylene acetals of aromatic aldehydes. 3,739,017, Cl. 260-475.00p.

Reilly, Lawrence C.: *See*—
Klarquist, John M.; Jones, Paul D.; and Reilly, Lawrence C., 3,738,862.

Reinhardt, Helmut; Brandt, Bernd; and Peters, Albert, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Apparatus for processing of finely divided particulate materials. 3,738,785, Cl. 425-85.000.

Reinhardt, Robert L. Earth moving apparatuses and process. 3,738,028, Cl. 37-4.000.

Reinke, Friedhelm; and Stengel, Edgar, to AEG-Elotherm GmbH. Apparatus for gripping and holding elongated workpieces particularly in induction hardening machines. 3,738,636, Cl. 269-49.000.

Reinke, Friedhelm, to AEG-Elotherm G.m.b.H. Apparatus for inductively surface-hardening workpieces of at least approximately axially symmetrical shape. 3,739,131, Cl. 219-10.790.

Reliable Electric Company: *See*—
Pierzchala, Chester E., 3,739,122.

Reliance Electric Company: *See*—
Humphrey, Andrew J.; and Szmanski, Dennis L., 3,739,253.

Renken, Claus J., Jr., to United States of America, Atomic Energy Commission. Method for measuring the amount of cold working in a stainless steel sample. 3,739,261, Cl. 324-34.00r.

Renock, James. Convertible golf cart. 3,738,677, Cl. 280-37.000.

Reserve Oil and Gas Company: *See*—
Barber, Mack A., 3,738,821.

Resh, Roy E., to Agridustrial Electronics, Inc. Grain moisture tester. 3,739,264, Cl. 324-61.00r.

Restivo, Francesco: *See*—
Serracchioli, Francesco; and Restivo, Francesco, 3,739,344.

Reuther, Roland A. Shiftable bed frame construction. 3,737,928, Cl. 5-312.000.

Rewo Chemische Fabrik G.m.b.H.: *See*—
Bloch, Michael; and Koebner, Adolph, 3,738,996.

Rex Asbestwerke Graf Von Rex KG: *See*—
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Reynolds, Eugene E., to Brunswick Corporation. Automatic bowling score computing and display device. 3,738,652, Cl. 273-54.00c.

Reynolds, Frank: *See*—
Dickerson, Henry F., 3,738,226.

Reynolds, John D. Apparatus and method for hatching fish. 3,738,317, Cl. 119-3.000.

Reynolds, Leslie E., to Deering Milliken Research Corporation. Knitting machine stop motion. 3,738,124, Cl. 66-163.000.

Reyrolle Parsons Limited: *See*—
Bolter, John Reginald, 3,738,770.

Rhoads, Stanley C.: *See*—
Stickney, William A.; Hunter, Willard L.; Elger, Gerald W.; and Rhoads, Stanley C., 3,739,061.

Ricca, Peter M.; Stickney, William W.; and Turner, Robert W., to Boeing Company, The. Film evaporator panel. 3,738,410, Cl. 159-13.00b.

Rich, Theodore A., to Environment/One Corporation. Portable condensation nuclei meter. 3,738,751, Cl. 356-37.000.

Richardson-Merrell Inc.: *See*—
Frey, Robert R., 3,738,843.

Richie, Carlton A., to Owens-Illinois, Inc. Plastic covered glass container. 3,738,524, Cl. 215-12.00r.

Richter, Friedrich; and Schramm, Heinz-Helmut, to Siemens Aktiengesellschaft. Blast-piston circuit breaker. 3,739,124, Cl. 200-148.00a.

Ricks, Tom E. Torque coupler. 3,738,122, Cl. 64-29.000.

Rico, Hubert: *See*—
Simonet, Guy; and Rico, Hubert, 3,738,084.

Ricoh Co. Ltd.: *See*—
Horigome, Hirofumi, 3,738,247.

Ridgway, James S., to Monsanto Company. Copolyamides of 9,9-bis(3-aminopropyl)-fluorene. 3,738,968, Cl. 260-78.00r.

Rike, Richard C., to General Electric Corporation. Piston actuated pressure responsive switch with recenter contact adjustment means. 3,739,119, Cl. 200-82.00d.

Riley, Mel J.: *See*—
Binnings, Gerald F.; Meyer, Theodore N.; and Riley, Mel J., 3,738,730.

Ritter, Orville A. Close coupled pulling hitch assembly. 3,738,682, Cl. 280-413.000.

Ritzenthaler, Richard L.: *See*—
Cole, George S.; Ritzenthaler, Richard L.; and Arnold, Don C., 3,738,389.

Ritzerfeld, Gerhard. Print wheel setting arrangement in duplicating print drums with punch control means. 3,738,261, Cl. 101-91.000.

Rizzi, George P., to Procter & Gamble Company, The. Dihydrochalcone sweetening agents. 3,739,064, Cl. 424-49.000.

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Roby, John. Anti-theft system for a vehicle. 3,738,444, Cl. 180-114.000.
Roche, Daniel F., 1/2 to Salka, Carl. Scraping or scoring tool. 3,738,001, Cl. 30-171.000.
Rockwell, Edward A.; and Holland, Harvison C. Anti-skid brake system. 3,738,711, Cl. 303-21.00a.
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Roeder, Richard C. Cutting means for rolled sheet material. 3,738,552, Cl. 225-34.000.
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Rosen, George; Epstein, Paul; and Wernikoff, Robert E., to Addressograph-Multigraph Corporation. Coding technique. 3,739,085, Cl. 178-6.000.
Rosenberry, George M., Jr., to General Electric Company. Speed control circuit for a single phase alternating current motor. 3,739,249, Cl. 318-227.000.
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Ross, Gerald F.; and Robbins, Kenneth W., to Sperry Rand Corporation. Base-band radiation and reception system. 3,739,932, Cl. 343-840.000.
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Ruda, Raymond J., to Bagcraft Corporation of America. Bag with draw band separably integral with bag body. 3,738,568, Cl. 229-62.000.
Rudman, Regis M.; and Adams, Lawrence D., to Auburn Engineering, Inc. Bag type shrink wrapping apparatus. 3,738,079, Cl. 53-66.000.
Rudolph, Gerald A.; and Howard, James S. Convertible capsule container. 3,738,723, Cl. 312-111.000.
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Saltzstein, Julian I., to American Uniform Company. Combination dust cloth and dust mop. 3,737,938, Cl. 15-231.000.
Salvatore, Joseph E. Bone gage. 3,738,355, Cl. 128-2.00s.
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Sando, Yoshikazu; and Ishidoshiro, Hiroshi, to Sando Iron Works Co., Ltd. Apparatus for treating cloth. 3,738,128, Cl. 68-22.00r.
Sanford, Thomas B.; and Drever, Robert G., to Woods Hole Oceanographic Institution. Measurements pertaining to ocean currents by beomagnetic geomagnetic. 3,738,164, Cl. 73-170.00a.
Sangiorgi, Mario, to Elettromeccania S.A.S. Mazzini Motori de Sangiorgi & C. Electronic control arrangement for the needle and threadcutter in an industrial sewing machine. 3,738,297, Cl. 112-219.00a.
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Sato, Stephens N., to Ivac Corporation. Temperature sensing probe and disposable probe cover. 3,738,173, Cl. 73-343.00r.
Sato, Stephens N. Disposable rigid thermometer probe cover. 3,738,479, Cl. 206-16.500.
Sato, Yoshihito, to Nippon Piston Ring Kabushiki Kaisha. Nickel alloy for automotive valve seats. 3,738,829, Cl. 75-170.000.
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Saunders, William K. Pulse radar and altimeter system with improved close-in response. 3,739,381, Cl. 343-13.00r.
Saunders, William Thomas, to American Can Company. Method of forming a bead on a container body. 3,738,300, Cl. 113-120.0aa.
Savee, Kenneth N. Portable toilet. 3,737,920, Cl. 4-142.000.
Savides, Christos; and Susi, Peter Vincent, to American Cyanamid Company. Flame-retarded olefin polymer compositions. 3,738,959, Cl. 260-41.00b.
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Schadler, Walter, to Balzers Patent-und Beteiligungs-Aktiengesellschaft. Method for operating a halogen detection diode and arrangement for carrying out the method. 3,739,260, Cl. 324-33.000.
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Schneider, Robert J.; and Levy, William I., to Hallicrafters Co., The. Digital data transmission system utilizing phase shift keying. 3,739,277, Cl. 325-30.000.
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Schulte, Rudolf R. Spring reinforced extensible catheter. 3,738,365, Cl. 128-350.00r.
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Schwartz, Jacob; and Rosner, George, to United States of America, Army. Ammunition target discriminator. 3,738,275, Cl. 102-70.2ga.
Schwartz, James W., to Zenith Radio Corporation. Camera process for color tube screen printing. 3,738,233, Cl. 95-1.00r.
Schwartz, Lawrence. Electrical cable terminating and grounding connector. 3,739,076, Cl. 174-78.000.
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Scotchmur, Ronald R., to Binks Manufacturing Company. Controller and control system. 3,738,627, Cl. 261-119.00r.
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Seekins, Harold L., to General Electric Company. Inspection machine using a master and follower to guide a probe at a predetermined angle relative to a test piece. 3,739,262, Cl. 324-40.000.
Segerstad, Goran J.F. Hard af. Reservoir brush for the application of agents on to surfaces. 3,738,761, Cl. 401-173.000.
Seidewand, Edward H., to General Motors Corporation. Gating mechanism for cylinder lock assembly. 3,738,135, Cl. 70-362.000.
Seiter, William A.; and Christensen, Calvin J., said Seiter assor. to said Christensen, Calvin J. Emergency light unit for mounting to an electrical wall outlet. 3,739,226, Cl. 315-86.000.
Sekizawa, Shine, to Tokyo Iryoki Kabushiki Kaisha. Manometer for sphygmomanometer. 3,738,157, Cl. 73-420.000.
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Serracchioli, Francesco; and Restivo, Francesco, to Olivetti, Ing., C., & C., S.p.A. Data terminal apparatus having a device for aligning printed data. 3,739,344, Cl. 340-172.500.
Shah, Jagdeep Chandravadan, to Bell Telephone Laboratories, Incorporated. Laser with means for suppressing back-ground fluorescence in the output. 3,739,295, Cl. 331-94.500.
Shannon, John Martin, to U.S. Philips Corporation. Methods of manufacturing insulated gate field effect transistors. 3,739,237, Cl. 317-235.000.
Sharaf, Ernest S., to Questor Corporation. Quick release locking mechanism. 3,737,958, Cl. 24-230.0ak.
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Shartrand, Allan C., to General Electric Company. Reverse flow cooling system for a dynamoelectric machine. 3,739,208, Cl. 310-58.000.
Sheldrake, Leonard J.: *See—*
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Shell Oil Company: *See—*
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Magoon, Eugene F.; and Slaugh, Lynn H., 3,739,029.
McClure, James D., 3,739,005.
Scheuerman, Ronald F., 3,738,437.
Shemdin, Byar Hazim, to Fiber Industries, Inc. Apparatus for extruding filaments having asymmetric cross-section apparatus. 3,738,789, Cl. 425-464.000.
Shepard, Robert L.; and Malone, Albert H., to United States of America, Atomic Energy Commission. Attenuation compensation for ultrasonic thermometers. 3,738,171, Cl. 73-339.00a.
Sherman, Albert H.: *See—*
Graff, Kenneth W.; and Sherman, Albert H., 3,738,981.
Sherman, Alden O. Gauge for measuring angles. 3,738,012, Cl. 33-172.00b.
Sherman, Ralph: *See—*
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Shibata, Norio: *See—*
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Shimano, Takao. Prefabricated house. 3,738,083, Cl. 52-582.000.
Shimizu, Tetsuji; Hotta, Yoichi; and Yoshida, Takomi, to Kabushiki Kaisha Tokai Rika Denki Seisokusha. Circuit system for switches of an automobile. 3,739,185, Cl. 307-10.00r.
Shimizu, Yoshiyuki, to Nippon Kogaku K.K. Photographic lens system of great relative aperture. 3,738,736, Cl. 350-215.000.
Shionogi & Co., Ltd.: *See—*
Sawa, Yoshiro; Maedi, Ryozo; and Tada, Haruhiko, 3,738,989.
Shioshvili, Tamaz Iosifovich. Apparatus for application of local hypothermy to the kidney. 3,738,372, Cl. 128-400.000.
Shirae, Nobuo, to Tiger Vacuum Bottle Industrial Company Limited. Method and device for preparing homemade ice cream. 3,738,619, Cl. 259-108.000.
Shirashaki, Takayuki: *See—*
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Amosov, Pavel Evgenievich; Imyanitov, Leonid Mikhailovich; Smekhov, Vitaly Konstantinovich; Trofimov, Valery Leonidovich; Shvarts, Avely Isaich; and Shnepp, Vladimir Borisovich, 3,738,783.
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Henrick, Clive A.; and Siddall, John B., 3,739,018.
Siegel, William Jordan. Fused eyeletting machine. 3,739,141, Cl. 219-150.00v.
Siemens & Hinsch mbH: *See—*
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Bochmann, Karlheinz, 3,739,289.
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Veith, Werner; Gross, Franz; and Pobl, Konrad, 3,739,303.
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Signorino, Charles A., to Colorcon Incorporated. Stabilized shellac sealing coating for tablets. 3,738,952, Cl. 260-27.00r.
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Simmons, Marion I.: *See—*
King, Lewis C.; Yearsley, Gerald A.; Adams, Anthony L.; Simmons, Marion I.; Altenburger, Eugene G.; and Yager, Billy P., 3,737,983.
Simon-Vermot, Andre, to Les Fabriques d'Assortiments Reunies. Timepiece escapement lever. 3,738,101, Cl. 58-116.000.
Simonet, Guy; and Rico, Hubert, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Explotitation des Procedes Georges Claude. Adsorption process and an installation therefor. 3,738,084, Cl. 55-31.000.
Simpson, Warren O. Tube tennis game with sloping peripheral boundary. 3,738,653, Cl. 273-30.000.
Singer Company (U.K.) Limited, The: *See—*
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Single, David, to Motorola, Inc. Process for reclaiming phosphors from used (spent) slurries and related areas. 3,738,939, Cl. 252-301.60s.
Sink, Larry W.: *See—*

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Skildum, John D. Test instrument and method for isolating and measuring the capacitance due to a particular functional group in a liquid. 3,739,265, Cl. 324-61.00r.
Skweres, Thomas W., to Ross and White Company. Vehicle washing installation with reverse wash cycle. 3,737,934, Cl. 15-21.00e.
Skyway Luggage Company: *See—*
Kotkins, Henry L., 3,737,980.
Slaats, Mathew A.; and Blessinger, James E., to Jasper Electronics Manufacturing Corporation. Keyboard for musical instruments. 3,738,216, Cl. 84-433.000.
Sladek, Norbert Joseph, to Bunker-Ramo Corporation, The. Microwave coaxial switch. 3,739,306, Cl. 333-97.00s.
Slaugh, Lynn H.: *See—*
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Smith, Donald F.: *See—*
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Smith, Douglas G.; Gagyi, Oltan; and Ross, Donald, to Mosler Safe Company, The. Loose document retrieval for pneumatic carrier bank teller system. 3,738,592, Cl. 243-19.000.
Smith, Floyd O.: *See—*
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Smith, Franklin G.: *See—*
Lunas, Francis J.; Burroughs, Edward E.; and Smith, Franklin G., 3,738,363.
Smith, George Warren. Method of making a molded foam decorative product. 3,739,051, Cl. 264-48.000.
Smith, Howard J., 50% to Miller, Ruby A. Jointer blade grinder. 3,738,067, Cl. 51-249.000.
Smith International Inc., mesne: *See—*
Litchfield, Mason Rawleigh; and Scott, Floyd Logan, Jr., 3,738,436.
Smith, Lewis Oscar, III. Cushion structure. 3,737,930, Cl. 5-348.0wb.
Smith, Lloyd H.; and Hughes, John H. Auxiliary bicycle seat. 3,738,704, Cl. 297-195.000.
Smith, Mertie G. Animal shelter. 3,738,322, Cl. 119-15.000.
Smith, Robert E. Disk rotating game. 3,738,658, Cl. 273-109.000.
Smith, Roy R., to General Motors Corporation. Self-cleaning lint filter for a clothes washer. 3,738,126, Cl. 68-18.00f.
Smith, Telford L.; and Turner, Frank E., to Smith-Blair Inc. Pipe clamp made of non-cast materials. 3,737,959, Cl. 24-279.000.
Smith, Thomas R., to Maytag Company, The. Oscillatable tube for washing machine. 3,738,130, Cl. 68-154.000.
Smith, Wallace M.: *See—*
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Smith, Walter E. Guitar construction. 3,739,072, Cl. 84-291.000.
Smith-Blair Inc.: *See—*
Smith, Telford L.; and Turner, Frank E., 3,737,959.
Smithfield Fibers, Inc.: *See—*
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Smithmyer, Joseph W.: *See—*
Raddi, William J.; Johnson, Robert W.; and Smithmyer, Joseph W., 3,738,371.
Smoot, Edward H., to Schlegel Manufacturing Company, The. Method of mounting plastic trim strip. 3,737,972, Cl. 29-453.000.
Snap-On Tools Corporation: *See—*
Green, Talmage O., 3,738,152.
Sneider, Vincent R. Disposable sanitary liner for garment. 3,738,362, Cl. 128-280.000.
Snider, Orvill E.; Loughlin, James E.; and Ortheil, Hans. Dyeability of melt blend fibers with high electron affinity dyes. 3,738,804, Cl. 8-15.000.
Snyder, David E.: *See—*
Bell, Ronald I.; Snyder, David E.; and Hendrickson, Donald Carl, 3,738,643.
Sobajima, Masaru, to Nippon Kogaku K.K. High-temperature hardness meter provided with a device for moving a sample object. 3,738,160, Cl. 73-81.000.
Sobottka, Dieter; and Folkens, Dieter, to Olympia Werke AG. Type carrier setting device. 3,738,264, Cl. 101-110.000.
Sobrefina S.A.: *See—*
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Societa' Italiana Resine S.p.A.: *See—*
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Societa Italiana Telecomunicazioni Siemens S.p.A.: *See—*
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Societe Anonyme dite: Cefilac: *See—*
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Societe des Lunetiers: *See—*
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Societe d'Etudes de Recherches et d'Application Scientifiques et Medicales E.R.A.S.M.E.: *See—*
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Societe Francaise d'Equipement Menager: *See—*
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Societe Generale de Constructions Electriques et Mecaniques (Alsthom): *See—*
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Societe Lannionnaise d'Electronique: *See—*
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Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
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Societe Rhodiaceta: *See—*
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Soehngen, John W., to Celanese Corporation. Method for producing non-woven fibrous products. 3,738,884, Cl. 156-167.000.
Sohnchen, Karl: *See—*
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Sola, Giuseppe, to Fiat Societa per Azioni. Control devices. 3,738,180, Cl. 74-53.000.
Solis S.r.l.: *See—*
Mazzi, Aramis, 3,738,123.
Somer, Albert. Automatic windshield washer reservoir filling and mixing means. 3,738,575, Cl. 239-284.000.
Sommers, Jay R.: *See—*
Lindquist, Julius A.; and Sommers, Jay R., 3,738,359.
Sonnichsen, Rolf. Rolling mill for passing webs, especially corrugated cardboard webs. 3,738,896, Cl. 156-462.000.
Sorimachi, Yuichi: *See—*
Wada, Akihiro; and Sorimachi, Yuichi, 3,738,681.
Southgate, Robert John, to Imperial Chemical Industries, Limited. Bonding porous thermoplastics. 3,738,886, Cl. 156-273.000.
Spagnuolo, Romolo. Device and method for linking tubular borders to a fabric edge. 3,738,291, Cl. 112-25.000.
Sparton Corporation: *See—*
Luteran, Frank K., 3,739,231.
Spath, Werner, to Siemens Aktiengesellschaft. Method for simultaneous production of a plurality of equal semiconductor components with a PN junction from a single semiconductor wafer. 3,738,917, Cl. 204-15.000.
Spear, Herbert W. Rotary mower including sharpener, and method. 3,738,092, Cl. 56-12.100.
Speicher, Paul L., to Cyclone Seeder Company, The. Metering device for securement to the hopper or container of a distributor of seeds and other fluent material. 3,738,546, Cl. 222-561.000.
Spencer, Lucina W., to Superior Continental Corporation. On premise telephone loop tester. 3,739,107, Cl. 179-175.300.
Sperry Rand Corporation: *See—*
Burdette, William M., Jr.; and Davis, David C., Jr., 3,739,349.
Ross, Gerald F.; and Robbins, Kenneth W., 3,739,392.
Ross, Gerald F.; and Robbins, Kenneth W., 3,739,932.
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Spors, James A., to Briggs & Stratton Corporation. Electrical terminal connector. 3,739,323, Cl. 339-275.000.
Spriggs, Robert G., to Automated Optics, Inc. Method and means for monitoring lens machining. 3,738,204, Cl. 82-1.00c.
Sprinter Pack AB: *See—*
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Sproul, Fred C., Sr. Football sighting and measuring device. 3,738,014, Cl. 33-289.000.
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St. Joseph Lead Company: *See—*
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Stachel, Ingeburg Lydia Katharina: *See—*
Beyerle, Rudi; Stachel, Adolf; Nitz, Rolf-Eberhard; and Scholtholt, Josef, 3,738,985.

Stafford, Milton C. Low speed high torque rotary drive for turning a furnace vessel or the like. 3,738,630, Cl. 266-36.00p.

Stahr, Henry M.; and Wunderlich, Andrew J., to Iowa State University Research Foundation, Inc. Furnace for volatilizing materials. 3,739,067, Cl. 13-26.000.

Stalp, Bernard J., to Data Time, Inc. Starter gun attachment. 3,739,368, Cl. 340-323.000.

Standard Oil Company: *See*—
Chu, Nan S.; and Jezl, James L., 3,739,042.

Stanford, James R.; and Watson, James D., to Nalco Chemical Company. Removal of orthophosphates from organic phosphate esters. 3,739,046, Cl. 260-990.000.

Stanford, James R.; and Vogelsang, Paul G., Jr., to Nalco Chemical Company. Removal of orthophosphoric acid from organic phosphate esters. 3,739,047, Cl. 260-990.000.

Stanley Works, The: *See*—
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Stark, Forrest O.: *See*—
Valicenti, John A.; Halm, Roland L.; and Stark, Forrest O., 3,739,036.

Stark, Hans: *See*—
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Starr, Robert V., to McGraw-Edison Company. Flexible switch support and terminal connector. 3,739,120, Cl. 200-144.00b.

Stars, William K., to Craftool Company, Inc., The. Hand loom. 3,738,395, Cl. 139-29.000.

Stasio, Robert, to Metafrome Corporation. Brine shrimp hatchery. 3,738,316, Cl. 119-2.000.

Stawski, Theodore H., to Becton, Dickinson and Company. Method and device for assembling a stopper to a syringe barrel. 3,737,973, Cl. 29-407.000.

Stearns, Charles F.; and Urban, Louis A., to United Aircraft Corporation. Fuel control for turbine type power plant having variable area geometry. 3,738,102, Cl. 60-39.28t.

Steel Company of Canada, Limited, The: *See*—
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Stein, Wolfgant J.; and Melconian, Jerry O., to Avco Corporation. Variable geometry combustors. 3,738,106, Cl. 60-39.230.

Steinberg, Adalberto. Buckle. 3,737,957, Cl. 24-188.000.

Steinberg, Max; Elian, Arthur; Verrone, Louis; and Klingenberg, Roger, to Apex Photoletter Composing, Inc. Photo-compositor. 3,738,235, Cl. 95-4.500.

Stelzig, Russelsheim: *See*—
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Stengel, Edgar: *See*—
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Stephant, Claude: *See*—
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Stern, Howard R.; Marshall, James E.; and Sloane, Thomas E., Jr., to Mattel, Inc. Indexing apparatus. 3,738,195, Cl. 74-819.000.

Stevenson, John E.: *See*—
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Stewart, George W., Jr.: *See*—
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Stewart, Russell L.: *See*—
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Stibbe-Monk Development Limited: *See*—
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Stickney, William A.; Hunter, Willard L.; Elger, Gerald W.; and Rhoads, Stanley C., to United States of America, Interior. Manufacture of synthetic rutile. 3,739,061, Cl. 423-610.000.

Stickney, William W.: *See*—
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Stiles, Alvin B. Fibrous catalyst structures for oven walls. 3,738,350, Cl. 126-19.00r.

Stirling, Leroy D. Cattle feeder. 3,738,327, Cl. 119-51.00r.

Stokes, Stanley L., to Wagner Electric Corporation. Control valve. 3,738,709, Cl. 303-6.00c.

Stoltman, Donald D., to General Motors Corporation. Throttle pedal controlled pneumatically operated throttle override. 3,738,347, Cl. 123-198.0db.

Stone, Eliot; and Patel, Pravin K., to Control Data Corporation, mesne. High recording density magnetic-media with square B-H loop. 3,738,818, Cl. 29-194.000.

Store, Elsa. Suspension clip for textiles or the like. 3,737,943, Cl. 16-87.200.

Stork Amsterdam N.V.: *See*—
Van Mil, Martinus Petrus Gerardus, 3,737,948.

Storm, Nelson. One wheeled front drive unit. 3,738,440, Cl. 180-13.000.

Stover, Harris A., to Collins Radio Company. VOR receiver immune to false bearing inducation stemming from adjacent channel modulation components. 3,739,284, Cl. 325-468.000.

Strachan & Henshaw Limited: *See*—
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Strandberg Engineering Laboratories, Inc.: *See*—
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Neitzel, Joseph C.; and Strandberg, Robert C., 3,739,266.

Straubel, Reinhard, to VEB Filmfabrik Wolfen Fotochemisches Kombinat. Magnetic shift memory. 3,739,357, Cl. 340-174.0mc.

Streat, Michael: *See*—
Cloete, Frankis Louis Dirk; and Streat, Michael, 3,738,814.

Strickland, Alvah T., to United States of America, Navy. Constant pressure liquid supply system. 3,738,775, Cl. 417-38.000.

Strickland, George Paul. Bowling pin setting device. 3,738,648, Cl. 273-43.00a.

Studinka, Josef; and Gabler, Rudolf, to Inventa AG fur Forschung und Patentverwertung. Process for the manufacture of linear high polymeric poly-N-alkylhydrazides. 3,738,966, Cl. 260-65.000.

Studley Paper Company, Inc.: *See*—
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Sturm, Hans Juergen; and Junge, Helmut, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of aromatic O-aminonitriles. 3,739,009, Cl. 260-465.00b.

Sturm, Ruger & Co.: *See*—
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Sturwold, Robert J.; and Sharkey, Hubert J., to Emery Industries, Inc. Polyamides modified with adipic acid and process for their preparation. 3,738,950, Cl. 260-18.00n.

S.T.X., Graipement d'Interet Economique: *See*—
Lyon, Remy Blanc; Hess, Willy; and Ramier, Georges, 3,738,803.

Sugaike, Suezo; Watanabe, Masayuki; and Kubo, Tomitaro, to Tokyo Shibaura Electric Co., Ltd. Inorganic refractory liquid composition. 3,738,863, Cl. 117-127.000.

Sugawara, Koboru; and Sawada, Takeshi, to Canon Kabushiki Kaisha. Input signal generating device. 3,739,204, Cl. 310-14.000.

Suggitt, Robert M.: *See*—
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Suladze, Ippolit Davidovich: *See*—
Alexandrov, Adolf Moritosovich; Suladze, Ippolit Davidovich; Dzhangirovich, Ruben; Aglitsky, Vladimir Efimovich; Kakhniashvili, Avtandil Semenovich; Kantor, Ilia Solomonovich; Dzhanelidze, Vazha Venediktovich; and Rozenfeld, Matvei Iosifovich, 3,738,393.

Sullivan, Harold E.: *See*—
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Sumitomo Electric Industries, Ltd.: *See*—
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Sumiyoshi, Masaharu; Sakakibara, Shigeru; and Ito, Osamu, to Nippondenso Co., Ltd. Working oil pressure control system for automatic transmission with torque converters. 3,738,193, Cl. 74-731.000.

Sun Research and Development Co.: *See*—
Lauer, James L., 3,739,063.
Thompson, Robert M.; and Duling, Irl N., 3,738,960.
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Sunbeam Corporation: *See*—
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Sunbeam Plastics Corporation: *See*—
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Sunkist Growers, Inc.: *See*—
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Superior Continental Corporation: *See*—
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Suzuki, Eijiro; Kimoto, Ryuzo; Imaoka, Kazuo; and Umemoto, Kojiro, to Takeda Chemical Industries, Ltd. Chlorination process. 3,739,010, Cl. 260-465.700.

Suzuki, Yoshio: *See*—
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Sweitzer, Stanley E., to Western Electric Company, Incorporated. Coating apparatus including conveyor-mask. 3,738,315, Cl. 118-49.500.

Swindell, Park T. Temperature modifying apparatus using expendable refrigerant. 3,738,121, Cl. 62-378.000.

Switchpack Systems, Inc., mesne: *See*—
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Symer, Orten Henry; and Bearce, Winfield Scott, to Orwin Associates Inc. Voltageion-demand deflection amplifier. 3,739,223, Cl. 315-27.70d.

Symons, James D., to General Motors Corporation. Self-energizing face seals. 3,738,667, Cl. 277-96.000.

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Szabo, Marton; and Bush, George W. Handle construction. 3,737,944, Cl. 16-110.000.

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Szyferblatt, Morris, to Optimetric Systems, Inc. Lens edging machine. 3,738,064, Cl. 51-93.000.

Tabler, Charles P. Connector for flexible belts. 3,737,954, Cl. 24-31.00c.

Tada, Haruhiko: *See—*
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Tagnon, Luc A., to Societe des Lunetiers. Machine for trimming and bevelling the edges of ophthalmic lenses. 3,738,065, Cl. 51-101.0lg.

Tait Manufacturing Company, The: *See—*
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Takakashi, Toshinaka: *See—*
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Takamizawa, Noboru; and Ohsuga, Masao, to ADAC Co., Ltd. Paper holder. 3,738,499, Cl. 211-120.000.

Takasaka, Yoshio: *See—*
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Takeno, Syozo; Tashiro, Mitsuhiko; and Kasai, Akira, to Tokyo Shibaura Electric Co., Ltd. Method for manufacturing a magnetic thin film memory element. 3,738,865, Cl. 117-212.000.

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Tanaka, Jojiro, to Kabushiki Kaisha Daini Seikosha. Digital electronic watch having calendar display arrangement. 3,738,099, Cl. 58-58.000.

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Tatbanyai Szenbanyak: *See—*
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Tate, James E. Extendible retractable vehicular hitch assembly. 3,738,683, Cl. 280-478.00r.

Tatsumi, Toshio; Kitani, Hideo; and Maruoka, Hideo, to Matsushita Electric Industrial Co., Ltd. Variable condenser. 3,739,244, Cl. 317-253.000.

Tatsutomi, Yasuo; and Yoshimura, Shiegetake, to Toyo Kogyo Co., Ltd. Exhaust gas purifying system. 3,738,109, Cl. 60-290.000.

Tavis Corporation: *See—*
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Tavis, John R., to Tavis Corporation. Function generator. 3,739,196, Cl. 307-229.000.

Taylor, John W., Jr., to United States of America, Army, mesne. Spectrum analyzer. 3,739,273, Cl. 324-77.00c.

TDK Electronics Corporation: *See—*
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Terry, Ruel C.; and Lane, Robert E., to Allied Chemical Corporation. Hydrocarbon extraction. 3,738,929, Cl. 208-11.000.

Terry, Stephen. Combination baby carriage and playpen. 3,738,700, Cl. 296-27.000.

Terryl K.: *See—*
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Tessler, Marvin. Coded plate for positive identification. 3,739,341, Cl. 340-149.00a.

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Tew, Walter Hosey, Jr.: *See—*
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Theer, Anton, to Agfa-Gevaert Aktiengesellschaft. Photographic apparatus with through-the-lens view finder. 3,738,245, Cl. 95-42.000.

Thelen, Johannes, to Walther & Cie Aktiengesellschaft. Process and apparatus for preheating powder. 3,738,794, Cl. 432-14.000.

Thermal Research & Engineering Corporation: *See—*
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Thillays, Jacques Claude, to U.S. Philips Corporation. Electroluminescent semiconductor device containing current-controlling rectifying device. 3,739,241, Cl. 317-235.00r.

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Maskal, John; Thompson, Ivam M.; and Heikel, Henrik, 3,738,909.
Thompson, James L., to Dow Chemical Company, The. Stabilization of water sensitive clays. 3,738,425, Cl. 166-305.00r.
Thompson, Robert G., to Briggs & Stratton Corporation. Pumpless fuel system for small engines. 3,738,625, Cl. 261-68.000.
Thompson, Robert M.; and Duling, Irl N., to Sun Research and Development Co. Polysulfone polymers from adamantane bisphenols. 3,738,960, Cl. 260-49.000.
Thompson, Robert M.; and Duling, Irl N., to Sun Research and Development Co. Polysulfonate polymers from adamantane bisphenols. 3,738,965, Cl. 260-49.000.
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Thorne, Gale H.; Wood, Orin Lew; and Knudson, Kay L., to Baxter Laboratories, Inc., mesne. Apparatus for preservation of organs. 3,738,914, Cl. 195-127.000.
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Tigerman, Louis, to Globe-Union Inc. Industrial-type variable-speed centrifuge. 3,738,490, Cl. 210-145.000.
Timken Company, The: *See—*
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Tintore, Alfonso Boguna. Method and apparatus for gravity-actuation of elevators. 3,738,455, Cl. 187-15.000.
Tixier, Michel, to Regie Nationale des Usines Renault and Automobiles Peugeot. Method for machining grooves and gear teeth. 3,738,225, Cl. 90-3.000.
Tokubo, Tsugio, to Teikoku Tsushin Kogyo Co., Ltd. Coordinated control device for variable resistors. 3,739,316, Cl. 338-128.000.
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Toledo, Emil, to United States of America, Navy. Electropolishing bath solution. 3,738,922, Cl. 204-129.900.
Tomalia, Donald A.; and Thill, Bruce P., to Dow Chemical Company, The. Copolymers of bis-oxazolines and dithiol compounds and process for their preparation. 3,738,961, Cl. 260-47.0cz.
Tomiyama, Shinichi; Susuki, Rinnosuke; Hoshi, Hiroshi; Saito, Jiro; Goto, Hiro; Umehara, Kenji; and Murakami, Keiichi, to Lion Fat & Oil Co., Ltd. Method of preparing calcium sulfite for use as a filler for plastics. 3,739,060, Cl. 423-512.000.
Tomy Kogyo Co., Ltd.: *See—*
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Toscano, Vincent A., to Amstar Corporation. Sugar syrup for bread dough preparation. 3,738,841, Cl. 99-90.00r.
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Tracy, Harold G. Torsion bar adjusting tool. 3,737,970, Cl. 39-225.000.
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Tuckey, Charles H., to Walbro Corporation. Vapor-free carburetor. 3,738,622, Cl. 261-3.00s.
Tuckey, Charles H., to Walbro Corporation. Diaphragm carburetor. 3,738,623, Cl. 261-35.000.
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Tyre, Roy W. Single component controlled RC bridge. 3,739,300, Cl. 331-141.000.
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Ueda, Toshiyuki; and Fukuda, Takuji, to Bridgestone Tire Company, Limited. Method for heat treating polyamide fibers. 3,739,055, Cl. 264-342.0re.
Ughi, Harry A. Security and safety device for apertures in buildings. 3,738,062, Cl. 49-55.000.
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Yamaguchi, Isao; and Kato, Nori, to Canon Kabushiki Kaisha. Positioning device using photoelectric scanning. 3,739,247, Cl. 318-640.000.

Yanagiuchi, Yukihiro, to Matsushita Electric Industrial Co. Ltd. Method of making a multi-channel magnetic head. 3,737,993, Cl. 29-603.000.

Yaple, Winfred E., to Continental Machining Co., Inc. Template controlled tool feed for machine tools. 3,738,207, Cl. 82-14.00r.

Yarbrough, Glen A. Burial vault. 3,738,070, Cl. 52-130.000.

Yatcilla, George E.; and Hollyday, James H., to Sperry Rand Corporation. Directional control apparatus for a bale thrower. 3,738,509, Cl. 214-42.00a.

Yazawa, Masahide, to Polymer Processing Research Institute, Ltd. Method for fibrillating stretched film. 3,739,053, Cl. 264-154.000.

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Zaleski, John F., to Mallory, P. R., & Co., Inc. Electric cell with depolarizer compensated against current erosion effects. 3,738,869, Cl. 136-14.000.

Zamzow, William H.: *See—*
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Zanzig, Charles E.: *See—*
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Zeyns, Johannes; and Enneking, Heinz. Fuel pressure regulating system for internal combustion engines. 3,738,343, Cl. 123-119.00r.

Ziemba, Richard T., to General Electric Company. Miniaturized thermal cell. 3,738,872, Cl. 136-90.000.

Zimmerer, Arthur L.; Zimmerer, Bernard J.; and Zimmerer, Paul B. Flexible joints for an overhead irrigation system. 3,738,687, Cl. 285-5.000.

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Zundel, Arthur P.; Patarini, Leon M.; Nickel, Warren A.; and Kratochvil, Frank, to National Can Corporation. Container with permanently attached tear strip and tab. 3,738,526, Cl. 220-54.000.

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LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF JUNE, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Amchem Products, Inc.: *See*—
Hamilton, Andrew J. Re. 27,662.

Armco Steel Corp.: *See*—
Tanczyn, Harry. Re. 27,671.

Ayers, David T., Jr., to Kelsey-Hayes Co. Trailer safety brake construction. Re. 27,667, 6–12–73, Cl. 303—7.

Dean, Duff L., deceased, by J. C. Dean; said Dean assignor to Triple D Industries, Inc. Boat fender structures. Re. 27,666, 6–12–73, Cl. 114—219.

Dean, Jean C.: *See*—
Dean, Duff L. Re. 27,666.

Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See*—
Fernholz, Hans, Schmidt, and Wunder. Re. 27,663.

Fernholz, Hans, H. Schmidt, and F. Wunder, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the manufacture of vinyl esters of carboxylic acids. Re. 27,663, 6–12–73, Cl. 260—497.

Greer, Homer L.: *See*—
Soltz, Daniel J., and Greer. Re. 27,668.

Hamilton, Andrew J., to Amchem Products, Inc. Compositions and methods for treating metal surfaces. Re. 27,662, 6–12–73, Cl. 252—79.4.

Honeywell Inc.: *See*—
Soltz, Daniel J., and Greer. Re. 27,668.

Hood, Stanley R., and R. E. Truitt, to Metals Engineering Co. Metallic strip milling machine. Re. 27,664, 6–12–73, Cl. 90—21.

Instytut Premsyslu Miesnego: *See*—
Miler, Kazimierz, and Kozlowski. Re. 27,670.

Kelsey-Hayes Co.: *See*—
Ayers, David T., Jr. Re. 27,667.

Kozlowski, Zbigniew: *See*—
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Metals Engineering Co.: *See*—
Hood, Stanley R., and Truitt. Re. 27,664.

Miler, Kazimierz, and Z. Kozlowski, to Instytut Premsyslu Miesnego. Method for producing a smoke-preparation. Re. 27,670, 6–12–73, Cl. 99—229.

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Rozanski, Henry A. Swimming pool coping and deck construction. Re. 27,669, 6–12–73, Cl. 52—169.

Sapin, Roy C. Key cutting machine. Re. 27,665, 6–12–73, Cl. 90—95.

Schmidt, Hans-Joachim: *See*—
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Soltz, Daniel J., and H. L. Greer, to Honeywell Inc. pH detecting device using temperature compensating field-effect transistor differential amplifier. Re. 27,668, 6–12–73, Cl. 330—30.

Tanczyn, Harry, to Armco Steel Corp. Stainless steel. Re. 27,671, 6–12–73, Cl. 75—126.

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Truitt, Robert E.: *See*—
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351 3,738,352
360A 3,738,353
388 3,738,354

CLASS 128
2S 3,738,355
2.05D 3,738,356
2.05G 3,738,357
85 3,738,358
132D 3,738,359
188 3,738,360
214E 3,738,361
280 3,738,362
281 3,738,363
285 3,738,364
350R 3,738,365
354 3,738,366
379 3,738,367
400 3,738,372
418 3,738,368
419D 3,738,370
419P 3,738,369
3,738,371
585 3,738,373

CLASS 131
2 3,738,374
10.3 3,738,375
21B 3,738,376

CLASS 133
2 3,738,377

CLASS 134
3,738,867
13 3,738,868

CLASS 135
2 3,738,378

CLASS 136
14 3,738,869
22 3,738,870
65 3,738,871
90 3,738,872
202 3,738,873

CLASS 137
106 3,738,379
115 3,738,380
199 3,738,381
340 3,738,382
381 3,738,383
493.9 3,738,384
606 3,738,385
625.64 3,738,386
625.65 3,738,387
627 3,738,388
636.1 3,738,389
797 3,738,390
823 3,738,391

CLASS 138
46 3,738,392
94.3 3,738,393
122 3,738,394

CLASS 139
29 3,738,395
122 3,738,396
159 3,738,397

CLASS 140
1 3,738,398

CLASS 141
73 3,738,400
215 3,738,399

CLASS 144
34R 3,738,401
197 3,738,402
249B 3,738,403
312 3,738,404

CLASS 148
12 3,738,874
3,738,875
105 3,738,876
175 3,738,877

CLASS 149
19 3,738,878

CLASS 150
52R 3,738,405

CLASS 151
41.75 3,738,406

CLASS 152
175 3,738,407
361FP 3,738,408

CLASS 156
11 3,738,879
17 3,738,880
3,738,881
3,738,882
3,738,883
167 3,738,884
172 3,738,885
238 3,738,888
263 3,738,889
273 3,738,886
286 3,738,890
363 3,738,891
380 3,738,887
3,738,892
394 3,738,893
441 3,738,894
443 3,738,895
462 3,738,896
498 3,738,897
3,738,898

CLASS 159
2E 3,738,409
13B 3,738,410
47R 3,738,411
48R 3,738,412

CLASS 160
35 3,738,413
345 3,738,414

CLASS 161
42 3,738,901
89 3,738,902
113 3,738,903
117 3,738,904
127 3,738,905
217 3,738,907

CLASS 162
80 3,738,908
181A 3,738,909
347 3,738,910
374 3,738,911

CLASS 164
5 3,738,415
60 3,738,416
76 3,738,417
245 3,738,418
281 3,738,419

CLASS 165
1 3,738,420
2 3,738,899
32 3,738,421
80 3,738,422
89 3,738,423

CLASS 166
298 3,738,424
305R 3,738,425
315 3,738,426

CLASS 168
4 3,738,427

CLASS 169
2A 3,738,428
2R 3,738,429
13 3,738,430

CLASS 172
20 3,738,431
248 3,738,432

CLASS 173
147 3,738,433

CLASS 174
23R 3,739,073
28 3,739,074
40R 3,739,075
78 3,739,076
149R 3,739,077

CLASS 175
6 3,738,434
56 3,738,435
65 3,738,436
70 3,738,437

CLASS 176
71 3,738,912

CLASS 177
25 3,738,438
50 3,738,439

CLASS 178
5.2A 3,739,078
5.4ST 3,739,079
5.4E 3,739,080
5.4R 3,739,081
6 3,739,082
3,739,083
3,739,084
3,739,085
6.6TP 3,739,088
6.6A 3,739,086
3,739,087
6.8 3,739,089
3,739,090
3,739,091
7.1 3,739,092
7.2 3,739,093
7.3R 3,739,094
7.6 3,739,095
69.5CB 3,739,103

CLASS 179
1E 3,739,096
7.1R 3,739,097
15AD 3,739,098
16F 3,739,099
18AD 3,739,100
18GE 3,739,101
41A 3,739,102
81C 3,739,104
90K 3,739,105
100.2Z 3,739,106
175.3 3,739,107

CLASS 180
13 3,738,440
19H 3,738,441
64R 3,738,442
98 3,738,443
114 3,738,444

CLASS 181
.5AG 3,738,446
.5R 3,738,445
33A 3,738,447
42 3,738,448

CLASS 182
7 3,738,449
48 3,738,450
155 3,738,451

CLASS 184
6.12 3,738,452
6.16 3,738,453

CLASS 187
15 3,738,455
51 3,738,454

CLASS 188
184 3,738,456
218XL 3,738,457

CLASS 190
49 3,738,458

CLASS 191
58 3,739,108

CLASS 192
3.58 3,738,460
8R 3,738,459
18B 3,738,461
18R 3,738,462
107M 3,738,463

CLASS 193
25 3,738,464
43B 3,738,465

CLASS 194
18 3,738,466
72 3,738,467
100A 3,738,468
101 3,738,469

CLASS 195
29 3,738,913
127 3,738,914

CLASS 197
17 3,738,470
52 3,738,471
71 3,738,472

CLASS 198
29 3,738,473
33AA 3,738,474
38 3,738,475
58 3,738,476
177 3,738,477
181 3,738,478

CLASS 200
4 3,739,109
5R 3,739,110
11TC 3,739,111
38F 3,739,112
38R 3,739,113
44 3,739,114
48R 3,739,115
56R 3,739,116
61.1 3,739,117
61.45R 3,739,118
82D 3,739,119
144B 3,739,120
144 3,739,121
146R 3,739,122
148A 3,739,124
3,739,125
148R 3,739,123
157 3,739,126
160 3,739,127
168G 3,739,128

CLASS 203
39 3,738,915

CLASS 204
9 3,738,916
15 3,738,917
37R 3,738,919
43 3,738,920
58 3,738,921
129.9 3,738,922
159.12 3,738,924
159.2 3,738,923
180P 3,738,925
192 3,738,926
228 3,738,927
290R 3,738,918
298 3,738,928

CLASS 206
16.5 3,738,479
42 3,738,480
46M 3,738,481
57A 3,738,482

CLASS 208
11 3,738,929
3,738,930
67 3,738,931

CLASS 209
12 3,738,483
73 3,738,484
74 3,738,485
80.5 3,738,486
3,738,487

CLASS 210
46 3,738,932
53 3,738,933
73 3,738,488
94 3,738,489
145 3,738,490
169 3,738,491
3,738,494
196 3,738,492
198C 3,738,493
321 3,738,495
488 3,738,496

CLASS 211
1.5 3,738,497
105.1 3,738,498
120 3,738,499

CLASS 212
66 3,738,500
125 3,738,501
145 3,738,502

CLASS 214
1BB 3,738,503
1QG 3,738,143
1.6 3,738,504
6DK 3,738,510
6D 3,738,505
16R 3,738,507
16.4C 3,738,506
23 3,738,508
42A 3,738,509
82 3,738,511
146E 3,738,513
152 3,738,514
3,738,515
302 3,738,516
515 3,738,517
650SG 3,738,518
652 3,738,519
653 3,738,520
658 3,738,521
730 3,738,512
764 3,738,522

CLASS 215
9 3,738,523
12R 3,738,524

CLASS 219
10.53 3,739,129
10.55 3,739,130
10.79 3,739,131
50 3,739,132
60A 3,739,133
62 3,739,134
69C 3,739,136
3,739,137
69D 3,739,138
69G 3,739,135
131R 3,739,139
144 3,739,140
150V 3,739,141
212 3,739,142
216 3,739,143
362 3,739,144
370 3,739,145
393 3,739,146
441 3,739,148
445 3,739,149
448 3,739,150
535 3,739,147

CLASS 220
23.4 3,738,525
54 3,738,526
63R 3,738,527
72 3,738,528
85H 3,738,529

CLASS 221
211 3,738,530

CLASS 222
52 3,738,531
63 3,738,532
102 3,738,533
129 3,738,534
137 3,738,535
153 3,738,536
3,738,537
183 3,738,538
341 3,738,539
397 3,738,540
402.1 3,738,541
402.16 3,738,542
453 3,738,543
454 3,738,544
525 3,738,545
561 3,738,546

CLASS 223
40 3,738,547
83 3,738,548
85 3,738,549
3,738,550

CLASS 224
26R 3,738,551

CLASS 225
34 3,738,552
97 3,738,553

CLASS 226
104 3,738,554
168 3,738,555
173 3,738,556
177 3,738,557

CLASS 228
1 3,738,559
10 3,738,560

CLASS 229
15 3,738,561
23BT 3,738,563
23C 3,738,562
36 3,738,564
55 3,738,565
62 3,738,566
3,738,567
3,738,568

CLASS 234
43 3,738,569

CLASS 235
54F 3,739,151
61.11E 3,739,154
61.5E 3,739,152
61.5R 3,739,153
89 3,739,155
133R 3,738,570
150.3 3,739,156
151.11 3,739,157
3,739,158
151.34 3,739,159
153AC 3,739,160
156 3,739,161
170 3,739,162
180 Re.27,672
183 3,739,163
197 3,739,164
201FS 3,739,165

CLASS 236
49 3,738,572
92B 3,738,573
100 3,738,571

CLASS 239
102 3,738,574
284 3,738,575
533 3,738,576
568 3,738,577
585 3,738,578
651 3,738,579

CLASS 240
1.3 3,739,166
2 3,739,167
7.1R 3,739,168
22 3,739,169
110C 3,738,599

CLASS 241
30 3,738,580
46.02 3,738,581
46.11 3,738,582
46.17 3,738,583
95 3,738,596
186R 3,738,585
190 3,738,584
195 3,738,586

CLASS 242
18DD 3,738,591
58.1 3,738,587
68.3 3,738,588
96 3,738,589
130 3,738,590

CLASS 243
19 3,738,592

CLASS 244
3.14 3,738,593
43 3,738,595
76R 3,738,594
102R 3,738,597
105 3,738,598

CLASS 248
121 3,738,600
210 3,738,601
228 3,738,602
3,738,603
354H 3,738,605
449 3,738,606
459 3,738,604

CLASS 250
49.5AE 3,739,170
83.3R 3,739,171
3,739,172
199 3,739,173
201R 3,739,174
203R 3,739,175
3,739,176
206 3,739,177
213VT 3,739,178
216 3,739,179
218 3,739,180
219DC 3,739,182
219D 3,739,181

219S 3,739,183
223B 3,739,184

CLASS 251

30 3,738,607
76 3,738,608
129 3,738,609
167 3,738,610
294 3,738,611

CLASS 252

8.5P 3,738,934
62.9 3,738,936
79.4 Re.27,662
117 3,738,935
180 3,738,937
188.3R 3,738,938
301.6S 3,738,939
373 3,738,900
3,738,940
389 3,738,941
408 3,738,942
431R 3,738,944
540 3,738,943

CLASS 253

201 3,738,663

CLASS 254

1 3,738,612
86R 3,738,613
187 3,738,614

CLASS 259

4 3,738,615
108 3,738,616
3,738,619
185 3,738,617
191 3,738,618

CLASS 260

2BP 3,738,945
2.3 3,738,946
2.5AJ 3,738,953
2.5AM 3,738,947
3 3,738,948
18N 3,738,949
3,738,950
23.7M 3,738,951
27R 3,738,952
29.6RW 3,738,991
29.6R 3,738,954
39R 3,738,955
41A 3,738,957
41B 3,738,959
41R 3,738,956
45.75B 3,738,958
47CZ 3,738,961
3,738,964
47XA 3,738,963
47R 3,738,962
49 3,738,960
3,738,965
65 3,738,966
78UA 3,738,967
78UR 3,738,969
78R 3,738,968
78.4D 3,738,970
80.73 3,738,971
85.5R 3,738,972
88.1P 3,738,973
89.5AW 3,738,974
91.3PV 3,738,975
93.7 3,738,976
94.9DA 3,738,977
112.5 3,738,978
211.5 3,738,979
239.3D 3,738,982
239.3P 3,738,980
239.3R 3,738,981
239.57 3,738,983
3,738,984
243B 3,738,985
243C 3,739,002
268R 3,738,986
279R 3,738,988
285 3,738,989
295.5R 3,738,990
307F 3,738,992
309.2 3,738,993
3,738,994
3,738,995
309.6 3,738,996
326.3 3,738,998
327B 3,738,999
338 3,738,997
391 3,739,000
397.2 3,739,001
439CY 3,739,004
439R 3,739,003
453PC 3,739,005
455A 3,739,006
455 3,738,906
464 3,739,007
465B 3,739,009
465G 3,739,008
465.7 3,739,010
465.9 3,739,011
470 3,739,012
471R 3,739,013
472 3,739,014
473G 3,739,016
473R 3,739,015
475P 3,739,017
482R 3,739,018
497A Re.27,663
514H 3,739,019
531C 3,739,021
531R 3,739,020
534M 3,739,022
539A 3,739,023
551S 3,739,024
559S 3,739,030
563D 3,739,025
576 3,739,026
583M 3,739,027
585A 3,739,028
3,739,029
607A 3,739,031
614R 3,739,032
615B 3,739,034
615F 3,739,033
619A 3,739,035
653.3 3,739,036
666XA 3,739,037
668R 3,739,038
671P 3,739,040
671R 3,739,039
835 3,739,041
878B 3,739,042
885 3,739,043
3,739,044
940 3,739,045
990 3,739,046
3,739,047

CLASS 261

3S 3,738,622
6 3,738,620
29 3,738,621
35 3,738,623
44R 3,738,624
68 3,738,625
112 3,738,626
119R 3,738,627
122 3,738,628

CLASS 264

.5 3,739,048
14 3,739,049
39 3,739,050
48 3,739,051
92 3,739,052
154 3,739,053
206 3,739,054
290T 3,739,056
342RE 3,739,055

CLASS 266

6S 3,738,629
36P 3,738,630

CLASS 267

52 3,738,631
135 3,738,632
141 3,738,633
156 3,738,634

CLASS 269

15 3,738,635
49 3,738,636
61 3,738,637
136 3,738,638
317 3,738,639

CLASS 270

31 3,738,640

CLASS 271

10 3,738,642
52 3,738,643
64 3,738,644
94 3,738,641
97 3,738,645
170 3,738,646

CLASS 272

58 3,738,649
62 3,738,650
67 3,738,651

CLASS 273

30 3,738,653
40 3,738,647
43A 3,738,648
54C 3,738,652
54R 3,738,656
55R 3,738,654
59A 3,738,655
106.5B 3,738,657
109 3,738,658
134AG 3,738,659
176K 3,738,664
185D 3,738,660
191R 3,738,661
201 3,738,662

CLASS 277

3 3,738,665
58 3,738,666
96 3,738,667
141 3,738,668
199 3,738,669
3,738,670
235B 3,738,558

CLASS 280

1.183 3,738,671
3 3,738,672
11.13L 3,738,675
11.28 3,738,673
11.37B 3,738,674
22 3,738,676
37 3,738,677
106R 3,738,678
124F 3,738,680
124R 3,738,679
150AB 3,738,681
413 3,738,682
478R 3,738,683
491R 3,738,684

CLASS 281

8 3,738,685

CLASS 283

63 3,738,686

CLASS 285

5 3,738,687
55 3,738,689
312 3,738,688

CLASS 287

52.06 3,738,691
119R 3,738,693
189.36F 3,738,690

CLASS 289

1.2 3,738,692

CLASS 292

264 3,738,694

CLASS 293

1 3,738,695
70 3,738,696

CLASS 294

19R 3,738,697
87.2 3,738,698

CLASS 296

23R 3,738,699
27 3,738,700

CLASS 297

180 3,738,702
184 3,738,703
195 3,738,704
377 3,738,705
410 3,738,706

CLASS 298

18 3,738,707
19R 3,738,701

CLASS 303

6C 3,738,708
3,738,709
7 Re.27,667
20 3,738,710
21A 3,738,711
21F 3,738,712
3,738,713

CLASS 305

24 3,738,714
56 3,738,715

CLASS 307

10R 3,739,185
23 3,739,186
29 3,739,187
103 3,739,188
117 3,739,189
118 3,739,190
121 3,739,191
136 3,739,192
205 3,739,193
214 3,739,194
229 3,739,195
3,739,196
238 3,739,197
252B 3,739,198
260 3,739,199
304 3,739,200

CLASS 308

3.8 3,738,716
122 3,738,717
174 3,738,718
189A 3,738,719
236 3,738,720

CLASS 310

8 3,739,201
8.3 3,739,202
13 3,739,203
14 3,739,204
42 3,739,205
49 3,739,206
58 3,739,208
59 3,739,207
64 3,739,209
68D 3,739,210
168 3,739,211
194 3,739,212
198 3,739,213
214 3,739,214

CLASS 312

39 3,738,721
71 3,738,722
111 3,738,723
140.1 3,738,724
246 3,738,725
257SK 3,738,726
276 3,738,727
330 3,738,728

CLASS 313

24 3,739,215
95 3,739,216
108R 3,739,217
188 3,739,218
278 3,739,219
281 3,739,220
318 3,739,221

CLASS 315

22 3,739,222
27TD 3,739,223
3,739,224
39.51 3,739,225
86 3,739,226
338 3,739,227

CLASS 316

3 3,738,729

CLASS 317

3,739,228
22 3,739,229
62 3,739,230
101CE 3,739,231
101CP 3,739,232
134 3,739,233
234R 3,739,234
3,739,235
235R 3,739,236
3,739,237
3,739,238
3,739,239
3,739,240
3,739,241
3,739,242
3,739,243
253 3,739,244
256 3,739,245
262A 3,739,246

CLASS 318

138 3,739,248
227 3,739,249
610 3,739,250
611 3,739,251
640 3,739,247
696 3,739,252

CLASS 321

9A 3,739,253
15 3,739,254
16 3,739,255

CLASS 323

43.5S 3,739,256
50 3,739,257

CLASS 324

28CB 3,739,259
33 3,739,260
34R 3,739,261
40 3,739,262
54 3,739,272
58.5C 3,739,263
61R 3,739,264
3,739,265
3,739,266
71CP 3,739,258
3,739,268
71R 3,739,267
76R 3,739,271
77C 3,739,273
106 3,739,269
120 3,739,274
156 3,739,275
161 3,739,276
166 3,739,270

CLASS 325

30 3,739,277
64 3,739,278
113 3,739,279
132 3,739,281
144 3,739,280
330 3,739,282
373 3,739,283
416 3,739,286
468 3,739,284
473 3,739,285

CLASS 328

133 3,739,287

CLASS 329

104 3,739,288
3,739,289

CLASS 330

5.5 3,739,290
8 3,739,291
17 3,739,292
30D Re.27,668
3,739,293
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	274	227,197		234	227,218			227,239			227,259			227,279		6	227,298
	283	227,198			227,219			227,240			227,260			227,280			227,299
D 4—	3	227,199		235	227,220			227,241			227,261			227,281	D55—	1	227,301
	16	227,200	D 9—	40	227,221	D14—	3	227,242		14	227,262		15	227,282	D56—		227,302
D 6—	20	227,201		44	227,222			227,243			227,263			227,283	D57—		227,303
	25	227,202		115	227,223			227,244			227,264			227,284			227,304
	26	227,203		137	227,224		6	227,245			227,265			227,285	D61—		227,305
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	66	227,205		182	227,226	D19—	1	227,247			227,267			227,287	D65—		227,307
	68	227,206		185	227,227	D22—	9	227,248	D29—	23	227,268			227,288	D71—		227,308
	71	227,207			227,228		27	227,249	D30—	1	227,269	D42—	7	227,289	D74—		227,309
		227,208			227,230		29	227,250		13	227,270	D44—	1	227,290	D79—	2	227,310
		227,209			227,231	D23—	28	227,251		43	227,271			227,292	D83—	1	227,311
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	75	227,211		191	227,229	D26—	1	227,253	D34—	4	227,273		26	227,293			227,313
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Frederick B. Dent, Secretary

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Robert Gottschalk, Commissioner